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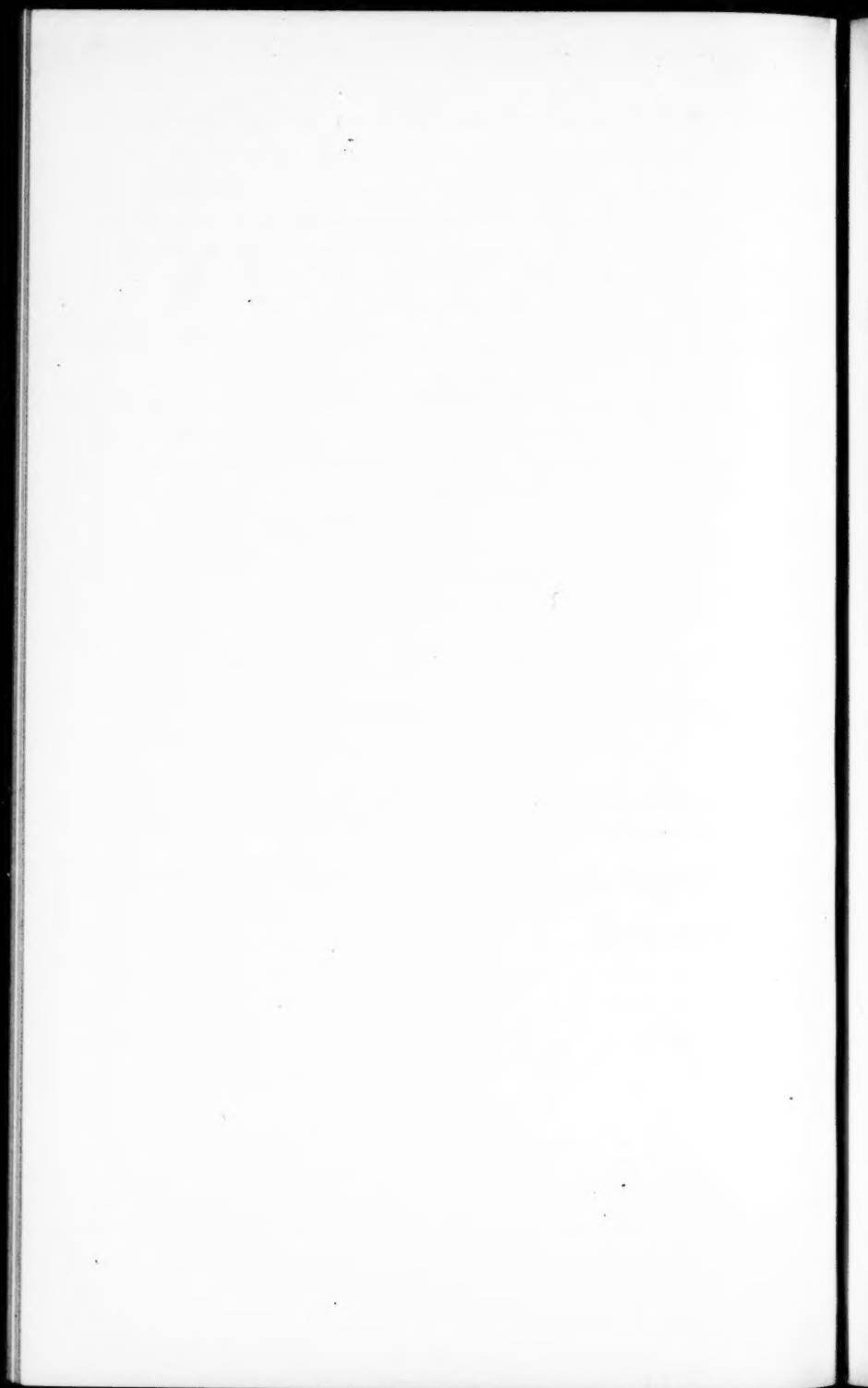
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A COMMUNITY MENTAL HYGIENE PROGRAM— THE NEXT GREAT OPPORTUNITY

by C.-E. A. WINSLOW, DR. P.H.¹

THERE can be no difference of opinion with regard to the tremendous importance of the problems of mental hygiene in modern society. We know that the institutional beds occupied by advanced cases of mental disease and mental defect are nearly equal in number to those occupied by all other sorts of sick persons taken together. We have good reason to believe that a similar ratio holds with respect to the less acute types of mental and emotional disorder; and it seems probable that the total burden of these minor deviations outweighs in the aggregate that of the more obvious and acute cases. In the realm of so-called physical illnesses, we know that the "common cold" causes more disability than any other condition. So, in the mental field, the sum of the petty fears and doubts and prejudices, the innumerable subconscious emotional reactions, which prevent everyone of us so-called normal beings from rational reactions to the real facts of life—these things handicap our society far more than does the financial burden of caring for the violently insane and the feeble-minded.

In family life, in industry, in politics, in international affairs, these are the real obstacles to fruitful living. There are real issues between individuals, between social classes, between nations. Yet few of these issues could not be solved by rational analysis and practical compromise if the ghost of the defense reaction could be exorcised from the council table. A word or a phrase, "Socialism," "Wall Street," "State Medicine," "Catholicism," "the Constitution" arouses emotions quite out of proportion to the context in which it may appear, because it touches off some hidden fear-

¹ Professor of Public Health, Yale School of Medicine; President, Connecticut Society for Mental Hygiene.

complex, of which we may be consciously quite unaware. The person of naturally "conservative" temperament fears change and novelty, exactly as some people are terrified by looking down from a high place. The person who is naturally inclined toward movement and action and adventure, fears the pressure of the *status quo* with a similarly unreasoning terror—just as some people are acutely miserable when they are shut up in a small closed room. The liberal is driven to irrational desperation by the fear of the power of the established order, just as the conservative is put in a similar frame of mind by the menace of red revolution; and, in either case, the power of rational thought is temporarily lost.

We owe a great debt to Vilfredo Pareto for emphasizing these facts. It is highly significant that the American translators of his monumental work should have entitled the English edition, *THE MIND IN SOCIETY*. It is not really a "Treatise on General Sociology" as Pareto himself called his book in Italian. It is an overwhelming demonstration of the importance of mental hygiene (or mental illness) as a factor in human society.

In general terms, then, there can be no doubt of the supreme importance of the problems of mental hygiene. Of their quantitative significance in an average random population we have no exact knowledge; and this is the first major problem in the field which needs exact study. We have statistics of cases of mental disease and defect so serious as to receive institutional care; but these figures are determined more by the capacity of existing institutions than by the real need for such care. We have some good studies of the psychological status and behavior problems of school children; and others dealing with the mental and emotional status of criminal and delinquent groups. We have some investigations of a few typical cases of families on the relief rolls. All these fragments of information emphasize the general importance of the problem. What we really need, however, is an

intensive study of a representative sample of unselected families to determine as nearly as possible what mental hygiene problems actually exist in such a group. How many representatives of such a sample population are in institutions for mental disease and defect? How many more should be in such institutions? How many children have experienced serious problems in school due to mental retardation or behavior abnormalities? How far is the family life handicapped by such problems? How far is the economic status of the family conditioned by them? How far are obvious recognized illnesses such as heart disease, cancer, tuberculosis complicated by emotional factors? What is the total burden of mental disease and defect in such an average group of the population?

The readers of the *Quarterly* will remember how illuminating was the discovery at Framingham that for every known case of tuberculosis in the community there were nine other unrecognized cases. They will recall, too, the startling results of the study made by the Committee on the Costs of Medical Care of ordinary health needs and the adequacy with which those needs are met or not met in various economic groups. In the field of mental health, we have not yet had even our Framingham demonstration.

The second problem which cries out for solution is the question how we can begin to meet the most urgent mental hygiene needs of the community, once those needs have been clearly and quantitatively evaluated. Here, too, there is an urgent demand for social research; and the experience of the past twenty years has given us a reasonably sound basis for at least an experimental approach.

The mental hygiene problem has been attacked in the past along two different lines, neither of which has led to the goal in view. On the one hand we have had amateurs without adequate medical background talking about the subject in such a way as to arouse unjustified hope and meddling with human personality

in such a way as to do harm rather than good. On the other hand, we have had a rather small group of physicians who were competent psychiatrists and who were at the same time also really interested in the community program for prevention of mental disease. These men have striven nobly and—as individuals—soundly, for the cause of mental health; but two serious handicaps have limited their efforts. In the first place, our mental hygiene clinics and behavior clinics have, for the most part, been conducted as more or less separate and isolated enterprises which have done admirable work with a small number of cases but have, as a rule, made singularly little impression on the thinking of the communities in which they operate. This would not perhaps matter much if the psychiatrists and psychiatric social workers of the separately-organized mental hygiene clinic could by themselves meet an appreciable part of the community need; but the volume of such service is insufficient to do more than scratch the surface.

Let me illustrate by our experience at Yale. At the height of our mental hygiene program for the university students (since, unfortunately, curtailed for financial reasons) we had four full-time psychiatrists serving as mental hygiene counsellors for our 5,000 students. These four psychiatrists were kept busy—and fruitfully busy—in aiding 5,000 “normal” young men and women to lead normal lives. But to render a service of similar kind to the population of the United States would require the training and employment of nearly as many more psychiatrists as there are now physicians of all sorts in the country.

Clearly, it is impossible to solve this problem by the efforts of psychiatrists and psychiatric social workers alone. It is worse than useless to attempt to meet the situation by unguided or misguided efforts on the part of untrained enthusiasts. Nor is it feasible to forget the whole situation and wait till the progress of fifty years has automatically clarified it. The men and women who are liv-

ing today are fighting their daily battles. They need, they demand, they deserve, the best aid which our present knowledge of the danger and our present weapons of defense permit.

We feel in the State of Connecticut that the tentative experimentation of the past few years, under the leadership of Dr. Van Norman Emery, medical director of the Connecticut Society for Mental Hygiene, has led us to a possible solution of the problem. Granting that mental hygiene service must be built on sound psychiatric knowledge and admitting that the psychiatrist cannot do the job alone—we have begun to visualize a different type of program which seems to us full of promise. It involves the use of the psychiatrist not as the head of a separate and isolated unit but as the center of a permeating influence operating through all the existing social agencies of the community. In one town, for example, where financial resources made available only a sum of \$2,500, Dr. Emery recommended, not the establishment of a separate mental hygiene clinic, but the employment of a psychiatrist to give half a day a week in the office of the nursing association, half a day in the office of the family society, and half a day in another local agency, working out with the staff of each agency on its own ground the attitudes of approach to the minor emotional problems of their clients and dealing himself, as a consultant to the agency, with the more serious of such problems. In this way, the psychiatrist enlists not one but fifty social workers in at least a moderately intelligent attack upon the actual problems of the community as a whole. In New Haven the remarkable development of mental hygiene in our Family Welfare Society and our Visiting Nurse Association illustrates what may be accomplished along such lines. On some such basis as this, we believe that a really sound attack can be planned to meet the mental hygiene needs of the community of today.

I am confident that the time is ripe for a carefully planned community study of the needs of a typical American population

in the field of mental hygiene, of the best community machinery for meeting those needs, of the costs of operation for a practical program, and of the results actually obtained.

Such a program should, in my judgment, be set up quite independently of the organized public health program of the community, cooperating with that program as it should with every social agency, but not organically a part of the health department, or of the public school system. As a public health man I should like to magnify the importance of my professional colleagues. Furthermore, I appreciate the abstract argument that mental health and physical health are both parts of the same problem. This argument is, however, logically but not psychologically or practically sound. As a matter of concrete experience it would be difficult to cite a single case in which any important progress in mental hygiene has been made under the auspices of a health department; and there are good reasons why this should be so. The problem, as we have seen, is equivalent—not to any one aspect of physical health—but to the whole area covered by the traditional public health program. It is too large to be handled by a bureau chief under the health officer. Its problems are quite different from those with which the health officer deals. Its methods are quite different from his. The social agencies with which it deals are different. It would be sounder, if we look at realities and not at the word "hygiene," to relate a mental hygiene program to the Board of Education or to the Welfare Department than to the Board of Health. If mental hygiene is to permeate all these agencies and all the other social agencies of the community it should be independent from, and autonomous with all.

In exploring the possibilities of the modern mental hygiene program, I should like to see a separate central directing unit set up—buttressed by definitely established connections with the board of health, the board of education, the official and voluntary

welfare agencies, the public health nursing group, the parent-teacher organizations, the medical society, hospitals, and dispensaries. With, and through, these agencies, it should make its study of needs, develop its practical program (which would be largely the program of the affiliating agencies), and measure the results.

The material for study should be an unselected representative cross-section of the population. It has often been suggested that such an experiment should be made in a small community and should cover the area in its entirety. I am convinced that such a plan is Utopian. The mental hygiene program must be built into an established and well-developed nexus of the conventional health and welfare agencies if it is to function effectively. Where such a nexus does not exist—as is the case in small communities—the problem simply cannot be solved within the bounds of reasonable expense. We have not yet provided fundamental health and social services for rural areas. When we have done so—and when we have developed our mental hygiene program under the favorable auspices of urban life—it will be time to consider a rural demonstration in this field.

In a well-organized urban area, which offers the possibility of a real mental hygiene program, it should be possible to obtain our sample group by such a method as that which has been used by the Institute of Human Relations at Yale in selecting a group of families for continuing study of the social problems of New Haven. If a group of a thousand families, quantitatively representative of all classes and races in the population were thus selected, the first step would be to study the extent of mental and emotional handicap within this group. The investigation could be accomplished in large measure through the social workers and nurses in actual contact with individual families (as was done in the C.C.M.C. study of the incidence and cost of illness), supplemented by study of school records, court records, and industrial experience. For each problem, the planning psychiatrist would

devise a line of approach which in most instances would again be through existing agencies, to whom grants could be made to cover the additional service involved. Teachers, parents, family physicians, nurses, social workers would be enlisted in the common task; and every step taken would add a new stroke to the picture of an ideal community program.

Meanwhile, a similar group of a thousand families should be studied with equal care as to the extent of their mental hygiene problems and left to the impact of the normal social forces of the community, but kept under systematic observation as a "control" to the "experimental" group. Thus, statistics as well as individual case-studies would make it possible to estimate the results actually attained. How many of the first group and how many of the second group developed progressive mental disease sufficient to require institutional care? How many came into conflict with the courts on account of problems involving mental hygiene? How many fell in the economic scale for similar reasons? How many families were broken up? How many children developed behavior problems in school?

Such a study as this would take a period of ten years and would require generous financial support. It would be much more difficult than the study of such a community problem as tuberculosis; and the results would be less clear-cut and conclusive. I am confident, however, that such a community experiment could be so planned and carried out as to give us for the first time a clear and accurate view of the real extent of the mental hygiene problem, to develop a sound and effective community program for dealing with that problem, to give at least a first approximation of its cost, and to demonstrate concrete accomplishments worth those costs many times over.

Mental hygiene awaits its Framingham experiment. To conduct such an experiment is perhaps the greatest single opportunity of today in the whole field of social welfare.

THE CONQUEST OF PESTILENCE

by CHARLES F. BOLDUAN, M.D.¹

IT is always most interesting to go back through the annual reports covering the work of New York City's Health Department fifty or more years ago, and to see the problems which faced our predecessors. Still more fascinating is it to go back to the beginning of the nineteenth century and note the course of the general death rate during the long period from that time to the present, as is done in the graph reproduced herewith.

The death rates for the early part of this period are, of course, not exact. It must be remembered that the compulsory reporting of deaths was not in force until after the middle of the nineteenth century. The record of deaths up to that time is based on the compilation of interment records, and is admittedly incomplete. But the death rate as plotted is at least the minimum during the first half of the century. On the other hand, it is not probable that the rates were much higher. It is true that from time to time the City Inspector's reports during the 30's and 40's lament the fact that in case of burials outside of the City there is often no record of death. However, in view of the fact that there was ample room for cemeteries on the Island of Manhattan and that ferry transportation was still most primitive, it is very doubtful that there was any significant proportion of burials outside of New York City during the first quarter of the nineteenth century. All in all, the writer believes that the death rates plotted in the graph constitute a tolerably accurate index to health conditions in New York City since the beginning of the nineteenth century.

One is struck at once by the appalling death rates recorded in 1832, 1849, and 1854, when cholera devastated the City. Had we gone back to 1798, yellow fever would have shown 1,500 deaths in a population of approximately 60,000. This outbreak is men-

¹ Director of Health Education, New York City Department of Health.

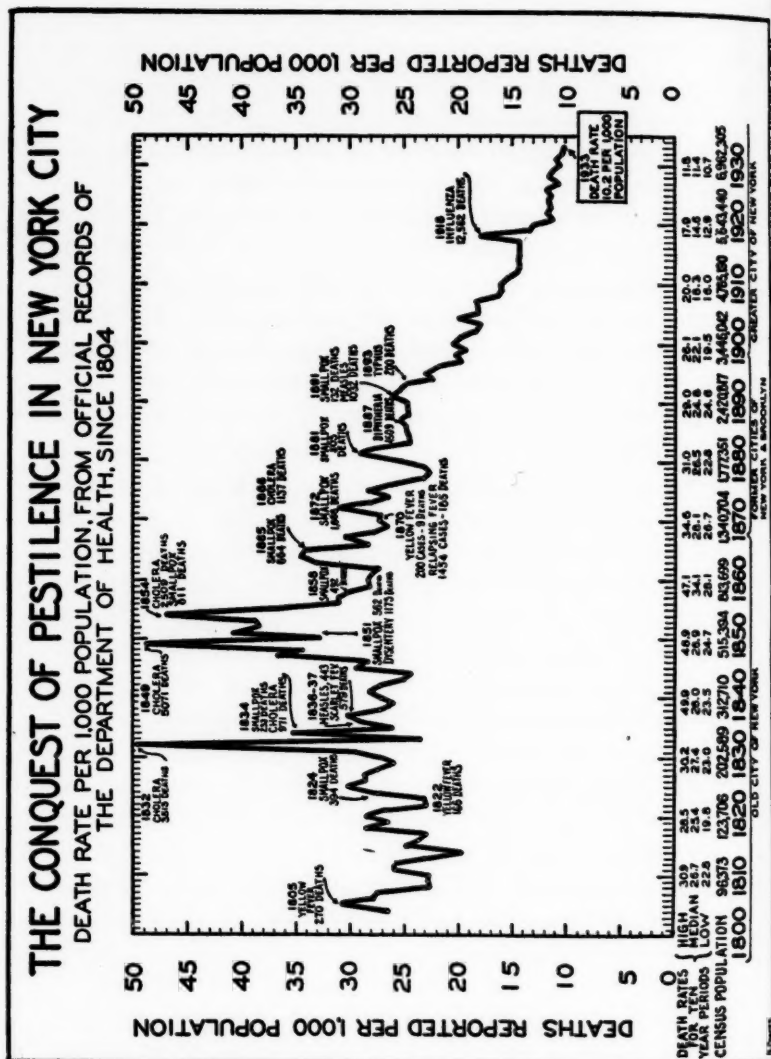


Fig. 1.

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little left for health officers to do. The fact is that we are still faced with many important and difficult health problems. Although many of the infectious diseases which formerly constituted the most serious menace to health have been effectively controlled, tuberculosis and syphilis, both preventable infectious diseases, still rank among the major causes of death. In recent decades the diseases of later adult life have been assuming even greater importance. Diseases of the cardio-arterio-renal system, cancer, diabetes—these are some of the conditions to which we must direct our efforts. The rising death rate from automobile accidents must give us grave concern. The reason for the high death rate from appendicitis must be investigated. Something must be done to reduce maternal mortality and the deaths of infants during the first month of life. In other words much still remains to be done, and complacency over progress during the past seventy-five years is entirely out of order. Let us rather use this graph as an incentive to do as well as did our predecessors.

LIFE TABLES FOR CHINESE FARMERS

by HARRY E. SEIFERT¹

NO one can properly understand the enormous difficulties facing the introduction of Western sanitation and medicine into China, or of changing the political, economic, and cultural life of the country without taking into consideration the vital forces of birth and death which are at the roots of many of the most serious problems presented in that country. Neither is there any better way to gain an appreciation of what modern sanitation, medicine, and technical achievement have done for health in the West than to study the hazards of life among the peasants who constitute about 85 per cent of the population of China, and perhaps one-sixth of the population of the world, and who as yet are virtually untouched by these developments.

Much has been written about health in China but, due to the absence of official registration of deaths, virtually all such discussions are based on the impressions of students familiar with the country, upon isolated studies of single communities or upon data from sections of large cities into which Western culture has penetrated. It is believed that the following tables present for the first time a picture of mortality conditions for a large section of the rural Chinese population.

The opportunity to collect population and vital statistics of areas representative of rural China on a larger scale than has hitherto been possible was afforded by the study of land utilization made by Professor J. Lossing Buck of the University of Nanking for the China Council of the Institute for Pacific Relations. With the assistance of the Milbank Memorial Fund, additional data were secured relating, among other things, to the age and sex distribu-

¹ From the Milbank Memorial Fund. Acknowledgment is gratefully made to Professor Lowell J. Reed of The Johns Hopkins University for his advice concerning the statistical procedures used in this study.

tion of the living population and of the people who died during the survey year. These data, which were collected under the direction of Professor Chi-ming Chiao, were coded in China and forwarded to the Fund for tabulation and analysis.²

The material was collected during the years 1929-1931 by the sampling survey method. University students selected, from districts with which they were personally familiar, areas that they considered to be typical of the various types of rural communities. These areas, with populations ranging from 396 to 6,260 inhabitants, were then enumerated as completely as possible by residents of the districts, who had been trained for the task and whose work was supervised. Altogether the survey included 119 localities in seventeen provinces and yielded information for 46,601 families.

Examination of the crude birth and death rates for individual areas made it clear that in spite of the care taken to obtain reliable data a number of areas had been inaccurately enumerated. Some of the rates were impossibly low, indicating a failure on the part of certain enumerators to record all of the births and deaths. Such a finding is not surprising when we consider the obstacles facing the investigation of an illiterate and superstitious population by enumerators with little experience in making field studies and only a hazy idea of the use to which their reports would be put. The surprising thing is not that the survey was poor in a few areas but that it was apparently so reliable in the great majority of areas, so far as can be judged by internal evidence.

In order to secure as accurate information as possible, a somewhat arbitrary procedure was adopted by which the data were rejected for those areas in which it was most obvious that a sub-

² For further details about the study and for a preliminary analysis of the data secured from 12,456 families enumerated early in the investigation, see: Chiao, Chi-ming: *A Study of the Chinese Population*. Reprinted from the *Milbank Memorial Fund Quarterly Bulletin*, xi, No. 4, October, 1933, and from the *Quarterly*, xii, No. 1-3, January, April, and July, 1934.

stantial proportion of the births or deaths had been omitted. If, after making ample allowance for the fact that low rates might be due to specific local conditions or to chance errors arising from small numbers, the birth and death rates appeared unbelievably low, the area was rejected.³ There were eighteen such areas but with two exceptions they were ones enumerated early in the investigation on a schedule form which was later changed. The highest birth and death rates on the basis of which any area was rejected were 20.1 and 10.2 respectively.

This rejection leaves 101 areas (Fig. 1) for which we have the records of a living population of 105,427 males and 97,190 females and of 2,817 male deaths and 2,682 female deaths with which to construct the rural Chinese life tables. The lowest birth and death rates in the 101 areas retained were 10.8 and 9.7 respectively, while for all areas combined the crude birth rate was 38.3 and the crude death rate 27.1. It is probable that even these rates are lower than the actual conditions warrant since the areas were



Fig. 1. Location of areas from which the population data used in this study were secured.

³ The actual procedure was to rank the areas which had been enumerated on the revised schedule in the orders of their crude birth and death rates and to select the first quartiles. Curves whose points were the first quartiles minus 3σ were then plotted for a series of n's. When either the birth or death rate of any area fell below the curves, the area was rejected.

retained whenever it appeared possible that the low rates might be due to sampling errors. Doubtless some of them were actually due to faulty enumeration. This is also suggested by the fact that the infant mortality rate found by the survey was 156 while in Ting Hsien where the registration system is well established it was 199 in 1933.⁴ The actual infant mortalities may differ since the survey areas are scattered all over China while Ting Hsien is only a single county. However, the crude birth and death rates of 38.3 and 27.1 found by the survey were very close to those of 40.1 and 27.2 reported in Ting Hsien.⁵ In general, such evidence as there is suggests that, while the survey data present a somewhat over-optimistic picture of the mortality conditions in rural China, they are, on the whole, surprisingly reliable.

The life tables for India,⁶ Japan,⁷ the United States, and New Zealand⁸ have been selected for comparison with those for rural China. India was chosen as an Oriental country having a dense population and low standards of living in which Western sanitation and medicine still remain unavailable to the great majority of the population. However, it is more largely tropical than China. Japan is included as the Oriental country which has introduced Western sanitation, medicine, and technical procedures most rapidly. New Zealand was selected as the country with the most favorable mortality experience and the United States as the one

⁴ Ch'en, C.C., M.D., M.P.H.: Public Health in Rural Reconstruction at Ting Hsien. *The Milbank Memorial Fund Quarterly*, October, 1934, xii, No. 4, p. 374.

⁵ *Ibid.*

⁶ CENSUS OF INDIA, 1931. Delhi, India, Manager of Publications, 1933, Vol. I, Part I Report, pp. 173-174.

⁷ Saito, H.: Sur la Table de Mortalité des Japonais. No. 4, xix^e, Session de l'Institut International de Statistique, Tokio, 1930.

⁸ The life tables for the United States and New Zealand were generously furnished by the Statistical Bureau of the Metropolitan Life Insurance Company. Those for the United States relate to the white population of the 1929 Death Registration States during the period 1929-1931, and were published in abridged form in "The Longevity of Our Neighbors in Canada," *Statistical Bulletin*, Metropolitan Life Insurance Company, November, 1933, xiv, No. 11, p. 2. Those for New Zealand appeared in "New Zealand Tops the World for Longevity," *Statistical Bulletin*, Metropolitan Life Insurance Company, May, 1934, xv, No. 5, p. 6.

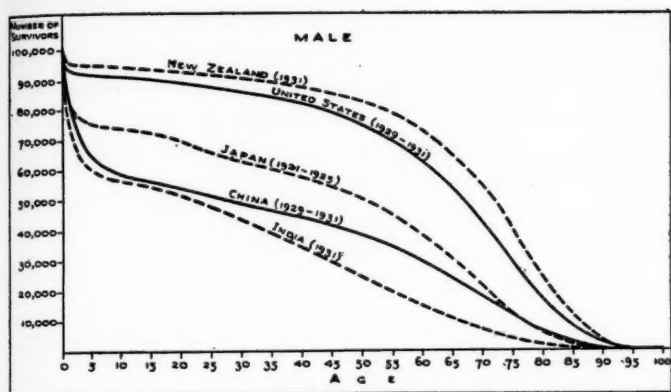


Fig. 2. Number of male survivors at each age out of each 100,000 born alive.

with which we are most familiar. It is unfortunate that in all four of these countries the tables relate to the whole population and not, as in China, simply to the rural groups. The tables for New Zealand and the United States are the most accurate. Those for Japan are less accurate but probably better than those for either India or China. The data on which the Indian tables are based evidently are far from satisfactory. Like those for China, they probably understate the true force of mortality.

In interpreting the life tables to follow it must be borne in mind that they merely express the mortality experience of a population observed during a short period of time *as if it were* that of a generation passing through life. Actually the two are the same only if mortality does not change for the period of a lifetime. In a country like China any generation passing through life would be exposed in some degree to the hazards of famine, floods, wars, and epidemics. The data gathered by a survey during a relatively uneventful three-year period will not reflect the decimating effects of such catastrophes.

Figures 2 and 3 and Tables 4 and 6 present the number of survivors at specified ages from 100,000 persons of each sex born

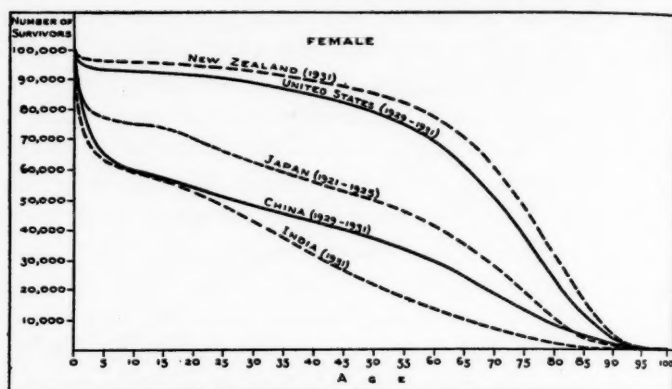


Fig. 3. Number of female survivors at each age out of each 100,000 born alive.

alive, *i. e.*, the l_x functions of the life tables. Since the number of survivors at any age is affected by the mortality hazards of all preceding ages through which they have passed, the curves for the countries start together but separate rapidly as the mortality rates of individual countries take their different tolls. From the first there are more survivors in New Zealand than in the United States and many more in the United States than in Japan. Except for the first year of life, Japan in turn has many more survivors than China, thanks to its lower child mortality. In both China and India the number of survivors is tremendously reduced during the first ten years. In the first year of life the reduction is much greater in India than in China but for the remainder of the first ten years it is apparently greater in China than in India. After thirty the numbers of survivors in India drop far below those in China.

A more definite picture of the hazards of life during the first year is given in Table 1 which shows the probability of dying between birth and the end of the first year of life. This, it will be recalled, amounts to an infant death rate expressed in terms of one instead of the usual one thousand births. Unfortunately,

the rates are likely to be among the least reliable of all, particularly in the case of China and India, because of the difficulty of securing complete enumeration of infant deaths. However,

Table 1. Probability of dying between birth and age 1, by sex, for various countries.

Country	Date	Probability of Dying Between Birth and Age 1	
		Male	Female
New Zealand	1931	.0384	.0255
United States	1929-1931	.0609	.0482
Japan	1921-1925	.1620	.1440
Rural China ¹	1929-1931	.1615	.1549
India	1931	.2487	.2323

¹ The differences between these figures and those obtained by dividing the infant deaths by the number of births are insignificant.

no close scrutiny is required to see that the differences are large. The mortality during the first year of life is between one and one-half and two times as high in the United States as in New Zealand, nearly three times as high in Japan as

in the United States, and more than one and one-half times as high in India as in Japan. In China, according to the table, it is about the same as in Japan, but actually it is probably higher though by no means as high as in India. Without making any allowance for understatement in the tables, male infant mortality is about four times as high in China as in New Zealand and that for females is about six times as high.

In New Zealand and the United States the number of female survivors from 100,000 births is greater than the number of male survivors to the same age throughout the entire table (Table 4). In all three of the Oriental countries, however, there is a considerable period beginning between ages 20 and 30 when the numbers of male survivors exceed those of females. The source of this difference is clearly shown in Figure 4 which permits a comparison of the male and female probabilities of dying (q_x values) for a series of ages beginning with ten. In the two Western countries female death rates are generally a little lower than those for males, but in the Oriental countries the death rates are substantially higher for females throughout the entire childbearing period, and even longer in the case of India where the dif-

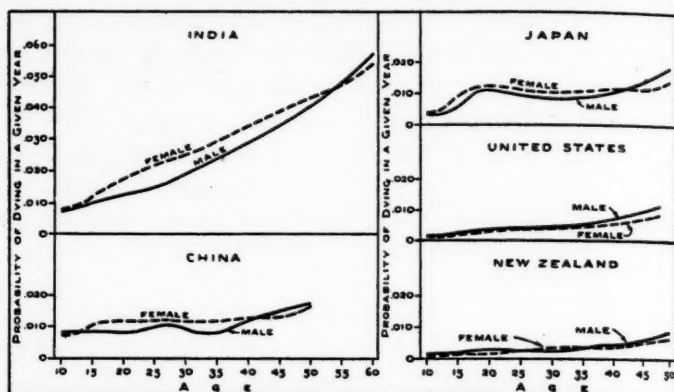


Fig. 4. Male and female probabilities of dying in a given year at selected ages.

ference is most marked. This excessive female mortality during the reproductive period arises doubtless in large part from almost continuous childbearing in an environment of abject poverty and ignorance.

Especial interest attaches to the age at which 50,000 people still survive from 100,000 born alive, that is the age to which a baby born alive has an even chance of survival; or, putting it another way, the median (middle) age at death of a group starting life. This age, which is called "the probable duration of life," is given in Table 2 for each of the countries under consideration. The differences are startling. One-half of the people born in India scarcely attain their majority, and

Table 2. Age to which one-half of the persons born alive survive, by sex, for various countries.

Country	Date	Age to Which One-Half of Those Born Survive	
		Male	Female
New Zealand	1931	71.6	73.9
United States	1929-1931	66.5	70.0
Japan	1921-1925	50.3	49.1
Rural China	1929-1931	28.0	26.3
India	1931	21.8	23.0

one-half of those born in China die before they are 28. In New Zealand, on the other hand, one-half of those born surpass even the Biblical standard of seventy years. In that country the prob-

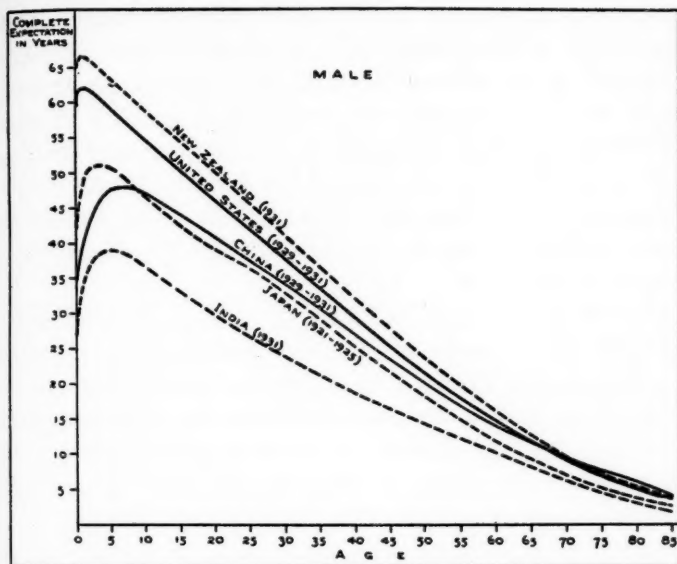


Fig. 5. Complete expectation of life in years for males at each age.

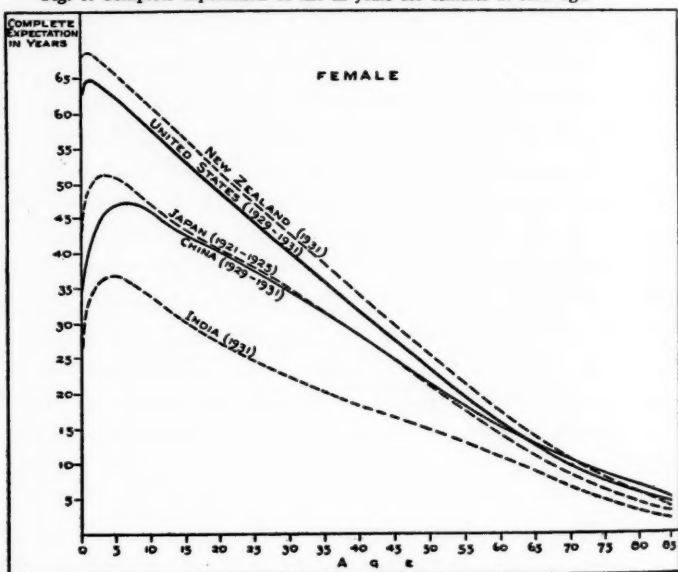
able duration of life is more than two and one-half times as long as in China, and more than three times as long as in India. When we see that in China one-half of the females born alive die before they are 26 years of age, we begin to appreciate how high the fertility of those who do survive must be to maintain a growing population.

The complete expectation of life at birth, like the probable duration of life, summarizes the mortality conditions of a country by showing the average length of life, but the average used is the arithmetic mean (common average) instead of the median. The probable duration of life is more interesting to the individual since it tells him the age to which he has an even chance of surviving, but the expectation of life is better known because of its usefulness to insurance companies which require an average that, when multiplied by the number of persons, will yield the

exact number of person-years to be lived by the insured group. The arithmetic mean which gives weight to extremes is the only average that has this property. This expectation of life, or arithmetic mean of the number of years lived, is given for the time of birth and for each succeeding age in Tables 5 and 6 and Figures 5 and 6. It must be remembered that, unlike the survival values which are influenced by mortality rates at all earlier ages, the expectation of life for any age is affected by the mortality rates of all later ages.

The expectation of life at birth (Table 3) is particularly interesting because it summarizes the effect of the mortality experience of all ages. Unfortunately, it is also less reliable than the expectancy for later ages, because of the difficulty of securing accurate data on infant mortality. However, it appears probable that the expectancy of females at birth does not exceed that of males

Fig. 6. Complete expectation of life in years for females at each age.



in China and India, as it does in the other countries. This is due principally to the excessive female mortality occurring, as we have already seen, in the childbearing period. It also is clear that

Table 3. Complete expectation of life at birth in years, by sex, for various countries.

Country	Date	Complete Expectation of Life at Birth in Years	
		Male	Female
New Zealand	1931	65.04	67.88
United States	1929-1931	59.31	62.83
Japan	1921-1925	42.06	43.20
Rural China	1929-1931	34.85	34.63
India	1931	26.91	26.56

life expectancy at birth in China is more favorable than in India and less favorable than in Japan, where, in turn, it is much less favorable than in either the United States or New Zealand.

In Japan today it is about the same as it was in Massachusetts forty-five years ago; while in China today it is not much different than it was in Massachusetts and New Hampshire nearly 150 years ago.⁹

In all three of the Oriental countries the maximum expectation of life occurs at a later age than in New Zealand and the United States due to the very high death rates of childhood. In China, apparently, this maximum is not reached until about age seven. After age ten the curves for China and Japan differ little. In fact, in the case of the males, the Chinese expectancies exceed the Japanese. Probably this difference is not real since, as has already been pointed out, the Chinese data tend to exaggerate the actual expectancies. However, it is clear that for ages after ten the expectations of life in China are greater than in India, not radically different than in Japan, and throughout the early adult ages much less than in the United States and New Zealand.¹⁰

⁹ Sydenstricker, Edgar: *HEALTH AND ENVIRONMENT*. New York and London, McGraw-Hill Book Company, Inc., 1933, p. 164.

¹⁰ The life expectancies shown here for ages after twenty are higher than those found by Dr. I-chin Yuan in his "Life Tables for a Southern Chinese Family from 1365 to 1849." (*Human Biology*, May, 1931, iii, No. 2, pp. 157-179.) However, the two studies are scarcely comparable. His most recent tables which are based on genealogical records and begin at age twenty, relate to persons born between 1800 and 1849 and to a population living near Canton, a district from which little of the material of the

(Continued on page 235)

Table 4. Number of survivors out of 100,000 born alive for each sex at selected ages for various countries.

AGE	NEW ZEALAND 1931 ¹		UNITED STATES 1929-1931 ²		JAPAN 1921-1925 ³		INDIA 1931 ⁴	
	Male	Female	Male	Female	Male	Female	Male	Female
0	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000
1	96,165	97,452	93,914	95,179	83,796	85,600	75,126	76,766
2	95,730	97,090	92,986	94,350	79,736	81,528	68,230	70,127
3	95,442	96,876	92,490	93,911	77,654	79,386	64,380	66,576
4	95,242	96,679	92,145	93,601	76,369	78,004	61,856	64,314
5	95,086	96,491	91,869	93,362	75,567	77,110	60,161	62,817
10	94,466	95,934	90,973	92,629	73,749	75,102	56,467	59,369
20	92,956	94,868	89,099	91,125	69,336	69,379	51,203	52,833
30	90,580	92,522	85,944	88,195	62,950	61,885	43,931	42,675
40	87,388	89,288	81,685	84,468	57,618	55,536	34,563	32,778
50	82,240	84,959	74,528	78,795	50,267	49,411	24,348	21,464
60	72,353	76,884	62,170	68,643	38,517	41,055	14,933	13,210
70	54,007	59,969	42,091	50,073	21,591	27,465	7,036	6,627
80	24,727	30,960	17,339	23,094	5,806	10,109	1,514	1,631
90	3,268	4,410	2,371	3,756	279	727	17	22

¹ See footnote 8.² See footnote 7.³ See footnote 8.⁴ See footnote 6.

Table 5. Complete expectation of life in years for each sex at selected ages for various countries.

AGE	NEW ZEALAND 1931 ¹		UNITED STATES 1929-1931 ²		JAPAN 1921-1925 ³		INDIA 1931 ⁴	
	Male	Female	Male	Female	Male	Female	Male	Female
0	65.04	67.88	59.31	62.83	42.06	43.20	26.91	26.56
1	66.61	68.64	62.12	64.99	49.14	49.42	34.68	33.48
2	65.91	67.89	61.73	64.55	50.62	50.86	37.14	35.60
3	65.11	67.04	61.06	63.85	50.96	51.22	38.33	36.48
4	64.24	66.18	60.29	63.06	50.81	51.12	38.88	36.75
5	63.35	65.30	59.47	62.22	50.35	50.71	38.96	36.61
10	58.75	60.67	55.03	57.70	46.53	47.00	36.38	33.61
20	49.61	51.28	46.07	48.55	39.10	40.38	29.57	27.08
30	40.78	42.45	37.57	39.99	32.59	34.69	23.60	22.30
40	32.07	33.80	29.25	31.53	25.13	28.09	18.60	18.23
50	23.73	25.24	21.54	23.41	18.02	20.95	14.31	14.65
60	16.22	17.30	14.73	16.05	11.87	14.12	10.25	10.81
70	9.87	10.63	9.22	9.98	7.11	8.44	6.35	6.74
80	5.45	5.63	5.27	5.66	3.87	4.41	3.13	3.25
90	1.89	2.00	2.88	3.11	1.95	2.04	1.12	1.18

¹ See footnote 8.² See footnote 7.³ See footnote 8.⁴ See footnote 6.

AGE	NUMBER OF SURVIVORS		COMPLETE EXPECTATION OF LIFE IN YEARS	
	Male	Female	Male	Female
0	100,000	100,000	34.85	34.63
1	83,850	84,506	40.28	39.70
2	75,392	75,658	43.63	43.17
3	70,452	70,639	45.58	45.13
4	67,065	67,316	46.81	46.29
5	64,541	64,909	47.58	46.95
6	62,636	63,123	47.98	47.23
7	61,206	61,748	48.07	47.25
8	60,093	60,729	47.93	47.02
9	59,272	59,960	47.57	46.60
10	58,670	59,431	47.05	46.00
15	56,232	57,020	43.93	42.80
20	53,834	53,885	40.74	40.08
25	51,531	50,814	37.40	37.29
30	48,983	47,840	34.16	34.40
35	46,925	45,064	30.51	31.30
40	44,716	42,395	26.84	28.05
45	41,880	39,732	23.41	24.70
50	38,715	37,000	20.04	21.26
55	34,865	33,581	16.85	17.96
60	29,642	29,207	14.19	15.22
65	23,908	24,103	11.75	12.69
70	18,050	18,200	9.42	10.67
75	11,602	12,806	7.71	8.72
80	6,557	8,071	6.08	6.80
85	3,116	4,073	4.02	5.16
90	584	1,508	2.34	3.32

Table 6. Number of survivors out of 100,000 born alive and complete expectation of life in years for each sex at selected ages, for rural China 1929-1931.

In the adult ages the life expectancies of the various countries come closer together until by age fifty they are much the same in all of the countries except India. The triumph of Western science over the mortality of childhood and youth has been so dramatic that we often forget in our enthusiasm that today life expectancy at fifty remains about the same as it was 150 years ago. The Chinese who survive the hazards of youth and early adult life

present survey was drawn. Moreover, it relates to the mortality experience of a generation while that in this study deals with the experience of persons of different ages during a survey year. Mortality from catastrophes such as famine, flood, war, and epidemics is more likely to be reflected in genealogical than in survey data.

can look forward to nearly as many additional years of life as the residents of the healthiest Western countries.¹¹

The general picture of rural China presented by these tables, although probably more optimistic than the situation warrants, is anything but encouraging. Extremely high mortality rates in infancy, childhood, and early adult ages make life at best precarious. Of the countries considered, only tropical India presents a worse situation.

¹¹ Sydenstricker, Edgar: *Op. cit.*, p. 164.

CAUSES OF THE DECLINE IN BIRTH RATES¹

by P. K. WHELPTON

THE discussion of births and birth rates in Iowa and the United States has brought out several important facts so far, namely that the number of births has been declining during recent years, that the birth rate has fallen steadily for nearly a century, that the downward pace of the decline was decreasing up to 1920 but rose during 1920-1930, that urban rates have been lower than rural rates, that foreign-born white women have been more fertile than native-born, that birth rates to women 20-24 and 25-29 are higher than those at other ages, and that the increase in the proportion of persons living under urban conditions and the decrease in the proportion of women 15-44 who are foreign-born or who are 20-29 have helped to bring about the large drop in the state and federal birth rate.

It is realized, however, that little has been said about certain fundamental causes of the decrease in human fertility. Has the decline of specific birth rates been due to biological changes affecting fecundity, to certain diseases (particularly venereal) becoming more widespread, to the nervous strain of city life becoming more intense and affecting more people, to changes in diet, to more persons being at sedentary occupations and fewer living an active outdoor life, to more pregnancies being terminated by induced abortions, or to more married couples practicing contraception? How important has each of these causes been in lowering specific birth rates? Unfortunately no data exist upon which to base an accurate and conclusive answer to such questions. An attempt will be made, however, to present the more important facts bearing on them, and to indicate the conclusions which these facts justify in the opinion of the writer.

¹ A reprint of part of a monograph, "Iowa's Population Prospect," by P. K. Whelpton. *Research Bulletin* No. 177, Iowa State College of Agriculture and Mechanic Arts, Ames, Iowa, 1934. Reprinted by permission of the author and the publisher.

That the low birth rate of today is due in part to biological and physiological causes is certain. The experience of physicians shows that there are a number of infecund or sterile married couples in the population, that is couples who have tried to have children but to whom no live births have occurred.² Such couples should be distinguished from those who are fecund but infertile, that is who have had no children simply because they have practiced continence, abortion, or contraception. According to Reynolds and Macomber, two of the leading gynecologists of Boston, the percentage of married couples in Massachusetts who are infertile is between 10 and 13 per cent, and most infertile couples are infecund. This is based on their general impressions:

. . . First, that among the intelligent proportion of the community regulation of the size of the family by artificial prevention is so far general as to be the rule. Second, that the entire prevention of children by such means is very infrequent. We have seen but few married women who did not wish at least for one child, and but few married men who did not wish at least one son to carry on the name . . . we have submitted this opinion as derived from our own experience to a considerable number of gynecologists of wide experience, and have found them unanimous in their assent to it.³

In cases among their private practice infecundity was found to result from a variety of causes, such as arrested development, diseases, infections, lesions, injuries, insufficient exercise, faulty diet, and "the strain and mental worry of modern life."⁴ Nothing is said as to the relative importance of these causes, however.

² The terms infecund, sterile, and fertile are used in correspondence with definitions adopted by the Population Association of America. (See *Human Biology*, February, 1934, 6, No. 1, p. 238.)

³ Reynolds, Edward and Macomber, D.: *FERTILITY AND STERILITY IN HUMAN MARRIAGES*. Philadelphia and London, 1924, W. B. Saunders Company, p. 33.

⁴ *Ibid.*, p. 123.

Some of them also explain why certain couples who have had one child are unable to have a second.

Although the writer does not question the statements of Reynolds and Macomber with regard to causes of infecundity and methods of treating it, he thinks that their estimate of the proportion of infertile couples who are infecund is too high. This is based primarily on the belief that the couples with whom they came in contact were not typical of the population as a whole. These physicians have built up a reputation for helping sterile couples to become fertile. The childless couples coming to them would thus be those unable to bear children previously; couples childless from choice probably would go to a birth control clinic instead. It is likely, therefore, that childless couples who did not want children would be much less numerous among their patients than in the general population.

The most accurate information available on the proportion of infertile couples in a large part of the United States is found in a study of the Milbank Memorial Fund. The data they obtained should be typical of the native-white population of native parentage north of the Mason and Dixon line and distributed between farm owners and four broad social classes in cities. Out of a total of 13,558 families studied, in which the wife was 40 years of age or over in 1910 and hence the family was practically complete, 1,891 or 13.9 per cent were childless. This is slightly higher than the estimate of Reynolds and Macomber for Massachusetts fifteen years later. Unfortunately for the question at issue here, the Milbank study was based on census schedules which gave no clue as to whether childlessness resulted from choice or from infecundity.

That childlessness varies among social classes, and that it has been increasing in each social class are important facts shown by the Milbank study. Wives 60-64 in 1910 probably had completed their families twenty years earlier on an average than those 40-44

in 1910. During this twenty-year interval the proportion of couples who were childless increased in each of the five social classes studied. (See Table 1.) The change was small among farm owners, from 9.0 to 10.6 per cent, but was large among unskilled laborers, from 4.4 to 16.3 per cent. Because the sample is sufficiently large and representative to indicate the trends in a large part of the United States there seems little question but that an increase in infertility has caused some of the decrease in the birth rate previously described. But because infertility may be due to voluntary prevention of births as well as to biological or physiological causes, these data throw little light on the part played by the latter causes in lowering the birth rate.

Beyond question a second cause of the present low birth rate in Iowa and the United States is the practice of abortion. Only induced abortions will be considered here, that is the abortions

Table 1. Percentage of wives aged 40-44 and 60-64 in certain social classes who had borne specified number of children.¹

TOTAL CHILDREN BORN	PROFES- SIONAL		BUSINESS		SKILLED		UNSKILLED		FARM OWNER	
	60-64	40-44	60-64	40-44	60-64	40-44	60-64	40-44	60-64	40-44
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
0	14.7	19.8	9.6	17.9	8.8	17.4	4.4	16.3	9.0	10.6
1	13.3	19.6	14.0	21.5	13.3	17.0	12.4	14.9	8.8	10.1
2	19.8	24.5	21.1	22.9	16.7	18.0	12.4	16.1	11.8	16.6
3	15.5	18.4	16.7	17.1	15.5	16.2	16.8	14.4	14.8	16.4
4	14.1	9.6	13.0	9.7	12.2	11.0	13.1	9.9	12.7	13.2
5	8.8	4.0	9.8	5.0	9.9	7.2	9.5	6.9	12.5	9.6
6	6.5	2.5	6.8	3.0	7.9	5.2	10.2	5.9	7.9	7.8
7	4.2	0.5	4.2	1.4	5.2	3.0	5.8	4.7	6.3	5.0
8	2.0	0.8	1.8	0.8	4.3	2.3	4.4	4.0	4.9	3.7
9	0.6	0.2	1.7	0.3	2.7	1.9	4.4	2.6	3.9	3.0
10 and over	0.6	0.2	1.2	0.5	3.6	0.7	6.6	4.3	7.5	4.1

¹ From Notestein, Frank W.: The Decrease in Size of Families from 1890 to 1910. The Milbank Memorial Fund *Quarterly Bulletin*, October, 1931, ix, No. 4, p. 184.

Based on a sample drawn from the 1910 census returns and containing 13,558 families in which the husband and wife were living together north of the Mason and Dixon Line in 1910, and "in which both the husband and wife were of native-white parentage and only once married. Within this group samples were obtained for each of the broad social classes in thirty-three cities having total populations of between 100,000 and 500,000 in 1910, and for the wives of farm owners in the rural parts of seventy-four counties adjacent to those cities."

brought on willfully as distinguished from spontaneous or involuntary miscarriages. As was the case with infecundity, the frequency of induced abortions in recent years can only be indicated roughly, and nothing shown about increases or decreases in past years. Current information about the number of abortions is meager and entirely inadequate; information for past decades is practically non-existent and cannot now be supplemented.

Estimates on the frequency of abortions in relation to total pregnancies are numerous in medical literature, and such estimates vary from one abortion in five pregnancies as the lowest estimate found. Supporting data on these estimates have not been found in medical or sociological literature.⁵

Physicians performing abortions in hospitals frequently enter them under related headings instead of as abortions, and keep no record at all of those they perform elsewhere. Needless to say self-induced abortions are not recorded, although some indication of their frequency can be had from the large number of hospital records of patients suffering from sepsis as a result of such action.⁶

Probably the best sources of information regarding the frequency of induced abortions in certain groups of people are the records of birth control clinics. A recent study based on the records of 10,000 women who went to the Birth Control Clinical Research Bureau in New York City from 1925 to 1929 shows that prior to their first clinic visit 38,985 pregnancies had occurred to these women, with 7,677 or 19.7 per cent ending in induced abortions.⁷ This excludes 340 abortions which were deemed necessary to save the mother's life. Sixty per cent of the 7,677 abortions were performed by a physician, 15 per cent by a midwife, and 25 per cent were self-induced.

⁵ Kopp, Marie E.: *BIRTH CONTROL IN PRACTICE*. New York, Robert M. McBride and Company, 1934, p. 121.

⁶ *Ibid.*, p. 122.

⁷ *Ibid.*, pp. 123-124.

... the physician's help was sought to terminate pregnancies in *three per cent of the total first pregnancies*, in the second pregnancies *two and one-half times as often as in the first* (7.7 per cent), in the third pregnancies *four times as often as in the first* (13 per cent) and in the fourth pregnancies *five times as often as in the first* (16.2 per cent).

In the first pregnancies the midwife's help was sought in one-half of one per cent, while in the second pregnancies she was the helping agent *three times as often as in the first*, in the third *five and one-half times as often*, and in the fourth *more than eight times as often as in the first*.

Somewhat less than half the self-induced abortions occurred in the first four pregnancies. In the later pregnancies the group of self-induced abortions is large if compared with the terminations for which the patient had to make financial sacrifices.⁸

Summing up the New York study, less than 4 per cent of first pregnancies were terminated by induced abortion, but about 20 per cent of third pregnancies and nearly 30 per cent of fourth pregnancies were so ended.

This group is not typical of all women in the United States, for it includes only those living in or about New York City, wishing to limit the size of their families, and going to a birth control clinic for contraceptive information. It is likely that in the population as a whole the inducing of abortions is not as common as in this group. The probability is, however, that the situation found among these New York women could be duplicated closely in certain parts of the population of Iowa and other states, particularly in the larger cities. Because abortion was so common in the New York group the chances are that it is an important cause of the present low birth rate in the United States as a whole. But the expectation is that it will decline in importance because of the influence of birth control clinics.

A third and probably the most important cause of the present

⁸ *Ibid.*, pp. 124-125.

low birth rate and of the rapid decline in past decades is the practice of contraception.⁹ This has long been the belief of various students of population. Thirty years ago J. S. Billings wrote regarding causes of the lessening birth rate: "It is probable that the most important factor . . . is the deliberate and voluntary avoidage or prevention of childbearing on the part of a steadily increasing number of married people who not only prefer to have but few children, but who know how to obtain their wish."¹⁰

Similar statements have been made by others based on their judgment and experience, but it is only recently that factual data have become available. These are still inadequate for the United States, but additions to the fund of knowledge are continually being made. Katherine B. Davis found in her study, *FACTORS IN THE SEX LIFE OF TWENTY-TWO HUNDRED WOMEN*, that 730 of each 1,000 married women returning questionnaires stated they practiced contraception.¹¹ In general these women were "of good standing in the community, with no known physical, mental, or moral handicap, of sufficient intelligence and education to understand and answer in writing a rather exhaustive set of questions as to sex experience,"¹² and well distributed over the United States. But since only 1,073 filled-in questionnaires were received from 10,000 women circularized, those replying may not be typical of the entire group. No statements were made on the questionnaires by these women as to the extent to which their practice of contraception had been successful in preventing pregnancies.

Information on the practice of contraception and success attained has recently been gathered by the Milbank Memorial

⁹ In this discussion no attempt will be made to differentiate between the various methods of contraception—continence, the "safe period," mechanical appliances, or chemical preparation—but simply to consider all methods combined.

¹⁰ Billings, John S.: *The Diminishing Birth Rate in the United States*. *Forum*, June, 1893, 15, p. 475.

¹¹ Davis, Katherine Bement: *FACTORS IN THE SEX LIFE OF TWENTY-TWO HUNDRED WOMEN*. New York and London, Harper and Bros., 1929, p. 14.

¹² *Ibid.*, p. xi.

Fund from [a selected group of] women coming to the Birth Control Clinical Research Bureau in New York City.

Two-thirds of the women are Jewish, one-sixth Catholic, and only one-tenth Protestant. Almost all of them have lived in New York City since their marriage, but more than half are foreign-born and only one-sixteenth native-born of native parents. They represent for the most part middle- and working-class families whose annual incomes in 1929 ranged from \$400 to \$20,000, with a median income of \$2,300. In 1932 the median income had dropped to \$1,200, about a fifth of the families were destitute or supported by organized relief, and the highest income was less than \$6,000.¹³

These women may not be typical of their religious and economic groups because of the fact that they were sufficiently interested in limiting the size of their families to attend the clinic. This in turn may indicate that they were above average in ease of becoming pregnant, or below average in their knowledge of effective methods of preventing conceptions. Some information about contraception was widespread in this group, however, for

before they attended the clinic 95 per cent of these women had made some effort to limit their families by the practice of what they believed to be contraception. Forty per cent of the families in the group used contraceptives immediately after marriage, and an additional 40 per cent started their use at some time before the beginning of the second pregnancy.¹⁴

Comparing the frequency of pregnancies among women who have been practicing contraception with their frequency among those who had not done so indicates that the former group lowered the chance of becoming pregnant by 73.6 per cent.¹⁵ Such a

¹³ Stix, Regine K. and Notestein, Frank W.: Effectiveness of Birth Control. *The Milbank Memorial Fund Quarterly*, January, 1934, xii, No. 1, pp. 58-59.

¹⁴ *Ibid.*, p. 59.

¹⁵ *Ibid.*, p. 67.

decrease is remarkable in view of the fact that these families presumably had received no technical information about contraception prior to the visit to the clinic. Most of them were using methods that are generally assumed to be matters of rather common knowledge in the population, and which may be widely practiced and quite efficacious among other groups of families. After these women had received instruction at the clinic it is probable that the risk of pregnancy among those practicing the clinic methods was lowered more than 73.6 per cent, for the experience of other clinics indicates that 90 per cent effectiveness in reducing births is common among women who have learned the clinic technique and who follow it carefully.¹⁸ The extent to which contraceptive methods can reduce the birth rate is thus seen to be enormous. . . .

The indications are clear that infecundity from biological or physiological causes, the ending of pregnancy by induced abortion, and the practice of contraception have all played a part in reducing the birth rate in Iowa and the United States. But because definite facts are inadequate concerning each, is there any means of judging their comparative importance? An examination of certain trends and differentials in birth rates seems to the writer to indicate that infecundity—the inability of married couples to have children—has been much less important than voluntary causes. For one thing, the large decreases in specific birth rates at the older ages than the younger from 1920 to 1930 are what would be expected to result from voluntary control. Among the great mass of the working classes, older married couples with all the children they could care for would almost certainly make more effort to prevent additional conceptions than younger couples still childless or having only one or two children. This might not be so true during years like 1931 to 1934 when many young married men could not find employment and were sup-

¹⁸ Kopp: *Op. cit.*, p. 176.

ported by their wives or parents, but it should hold true for 1920-1930 and for other long periods.

Considering another factor, the differentials between urban and rural specific birth rates seem explainable to an important extent by voluntary action. Children have been less of an economic burden on the farm than in the city, particularly because much of the family food is raised at home instead of being bought for cash at the store, and because there is productive work at which children can help after school hours and during vacations.

From the standpoint of personal freedom, farming is an exacting occupation because livestock require care twice a day or oftener. Farm women usually look after the chickens and often help with other stock; hence if they feel tied down, it may be because of these duties rather than because of children. With city women, on the other hand, the husband's business is usually at some distance from the residence, so that there is only house-keeping to do at home. This is easier than in the country because nearby grocery or delicatessen stores simplify cooking, and restaurants may not be far distant. Home duties in childless families, therefore, are much less confining in the city than in the country. Partly on this account many city women seek full-time occupations outside the home and independent of their husband's business, which gives an additional reason for postponing child-bearing temporarily and sometimes permanently. This situation has no counterpart on the farm. Again, social or recreational life in the country has been organized around families to a much greater extent than in cities, the tendency in the latter being to individualize and commercialize it. For these reasons there may be less desire to restrict the size of family among farmers than among city dwellers, less use of abortion or of contraceptive measures, and hence a higher birth rate. Because contraception is so much simpler and safer than abortion, the conclusion seems justified that it has been the more important method used.

It is probable, too, that the spread of knowledge regarding contraception has been slower in the country than in the city. Almost all of the 121 birth control clinics now operating are located in cities. Except for the work of these clinics most of the spread of birth control information has been by word of mouth, partly because of federal and state laws, and partly because of social customs. Under these conditions contraceptive knowledge no doubt has been passed along most rapidly in places where large numbers of people come together in close daily contact. Factories and stores are ideal for this purpose. If the employees are women rather than men, contraceptive information probably spreads more rapidly because preventing an excessive number of births may ease a woman's life much more than that of her husband.

All this does not mean that there are no differences in diet, in type of work, in amount of time spent outdoors, and in the practice of abortion which may be partially responsible for higher birth rates in rural than in urban communities; it simply means, however, that these factors are less important than differences in birth control. Neither is it implied that the rural-urban birth rate differential may not disappear in time if factory methods are applied to farming or if country-city ties are strengthened in other ways. The movement back to the land that has gone on during the depression may hasten the disappearance of this differential.¹⁷

In both city and country it seems reasonable that birth control would be practiced first among the so-called upper classes, made up chiefly of professional and business men (as distinguished from unskilled or skilled workers) in the city and farm owners (as distinguished from renters or laborers) in the country. Members of the upper classes have usually progressed further in their education; hence they would know more about the various means

¹⁷ Whelpton, P. K.: The Extent, Character and Future of the New Landward Movement. *Journal of Farm Economics*, January, 1933, 15, No. 1, pp. 57-66.

of preventing conception.¹⁸ Many of them have acquired upper-class standing as a result of their own efforts in business or the professions, their parents having been unskilled workers with little property. Their success in this matter may have been due in part to the deliberate avoidance of many children, which lessens family cares and expenses and allows more energy to be devoted to economic and social striving. The results of certain studies of the Milbank Memorial Fund are in accord with this hypothesis, for they show a marked relation between fertility and social class in the native-white population of 1910. In the urban sample studied, the standardized cumulative birth rate by classes was 129 for professional, 140 for business, 179 for skilled workers, and 223 for unskilled workers. In the rural sample the rate was 247 for farm owners, 275 for farm renters, and 299 for farm laborers.¹⁹ When the age of the wife at marriage was from 14 to 19, the inverse relation between birth rate and social class was even more marked; but when marriage took place from the age 25 to 29 the birth rate differed little among the urban classes, although the inverse relation was apparent to some extent in the farm groups.²⁰ In discussing this matter Notestein states:

The cause of this shift from an inverse to a direct association between fertility and social status as marriage age advances cannot be determined from our data. Probably a number of factors were involved. As pointed out in the English Census Report, 'Fertility of Marriage,' the fact that the upper-class birth rates were relatively high for women

¹⁸ In the Davis study the percentage of women employing contraceptive methods was 76.48 among university and college graduates, 71.29 among college undergraduates and high school and normal school graduates, 64.51 among less than high school, and 63.63 among the private school or tutor groups. Katherine B. Davis: *Loc. cit.*, p. 14.

¹⁹ Sydenstricker, Edgar, and Notestein, Frank W.: Differential Fertility According to Social Class. *Journal of the American Statistical Association*, March, 1930, xxv, New Series 169, pp. 9-32.

²⁰ Notestein, Frank W.: The Relation of Social Status to the Fertility of Native-Born Married Women in the United States. G.H.L.F. Pitt-Rivers, editor, *PROBLEMS OF POPULATION*. London, George Allen and Unwin, Ltd., 1932.

whose late marriages offered slight inducement to family limitation, and relatively low for those whose early and perhaps impecunious marriages made family limitation most desirable, suggests that for early marriages birth is increasingly subject to voluntary control as social status rises.

The decrease in standardized birth rates found in going from unskilled laborers to professional people results from fewer large families rather than from more childless families. The proportion of urban wives aged 40 to 49 in 1910 who had borne no children varied from 16.3 per cent for unskilled to 19.8 per cent for professional, whereas the proportion who had borne five or more children varied from 28.4 per cent for unskilled to 8.2 per cent for professional.²¹ Complete infertility, whether involuntary or otherwise, thus appears to be of considerably less importance than the factors holding the number of births per wife below five with contraception probably much more important than abortion.

Differences in age at marriage probably explain to a small extent why the proportion of large families decreases with a rise in social status, because the modal age at marriage of brides under 40, who were married between 1900 and 1905, increased from 18.5 for unskilled laborers to 23.5 for professional persons.²² But most of the decrease in the proportion of large families as social status rises remains to be accounted for by causes of infecundity after one or more births have occurred, by the practice of abortion or by the use of contraceptive methods. For reasons already indicated, the last named seems the most important.

Since writing the above, results have become available from a study just completed which so strongly support the argument that birth control is the primary means by which the decrease in the birth rate has been brought about as to make it almost incon-

²¹ Notestein, Frank W.: The Decrease in Size of Families from 1890 to 1910. The Milbank Memorial Fund *Quarterly Bulletin*, October, 1931. ix, No. 4. pp. 181-188.

²² Notestein, Frank W.: The Relation of Social Status to the Fertility of Native-Born Married Women in the United States. *Op. cit.*

trovertible. Under the direction of Dr. Raymond Pearl of The Johns Hopkins University, information regarding size of family and practice of birth control has been obtained from 4,945 married women in thirteen states. These women were not selected because of their interest in contraception; in fact, hardly any of them had ever been to a birth control clinic.

They are a fair sample of run-of-mine urban dwellers in religion, occupation, wealth, and education. Fifty-nine per cent of the whites and 66 per cent of the Negroes never got more than elementary schooling. Thirty-two per cent of the whites and 27 per cent of the Negroes attended high school, while only 6 per cent of the whites and 3 per cent of the Negroes went to college or university. The white women studied had been married 5.7 years, and the Negro women 6.4 years, on the average.

. . . among the well-to-do and rich white women over 78 per cent had practiced birth control. . . (In this group) the average birth rate was lowered some 73 per cent below its natural biological level. . . Among the very poor and poor classes of whites (who make up a large proportion of the whole population) only a few more than one-tenth of the women practiced birth control really intelligently. . . (These women) succeeded in lowering their average birth rate below the natural biological level by 57 per cent.

If birth control were not practised the birth rate would be approximately the same in various social levels and for white and colored races which indicates that the innate natural fertility (fecundity) of married couples is probably substantially similar in all economic classes, and in the white and colored races. . . Apparent differential fertility observed between social and economic classes, and between the races, appears on the basis of the more refined and accurate computations of this investigation to be due almost wholly to those artificial alterations of natural innate biological fertility which are collectively called birth control, at least in the sample of American women so far studied.²³

²³ Milbank Memorial Fund press release, March 14, 1934.

If it is true that the increased practice of contraception has been the means by which much of the decline in the birth rate has been brought about, there still remains the important question as to why contraceptive methods are used to a greater extent now than formerly. A number of hypotheses have been advanced to answer this question, among them the emancipation of women, the lessening influence of the church, the change in the attitude toward sex relations (the abandonment of the double standard), the desire for a higher economic and social standard of living, and the influence of city life. No doubt all of these and others as well have had some influence, but the exact importance of each is undeterminable at the present time.²⁴

²⁴ For a discussion of these factors, see the following: Ungern-Sternberg, Roderich von: *The Causes of the Decline in Birth-Rate within the European Sphere of Civilization*. Cold Spring Harbor, Eugenics Research Association (Monograph Series IV), August, 1931. Kulka, Ernst: *The Causes of Declining Birth-Rate*. Same series, No. V. Nearing, Nellie S.: *Education and Fecundity*. American Statistical Association. Publications, June, 1914, 14 New Series No. 106, pp. 156-174. Englemann, George J.: *Education Not the Cause of Race Decline*. *Popular Science Monthly*, June, 1903, 63, pp. 172-184. Thompson, Warren S.: *POPULATION PROBLEMS*. New York, McGraw-Hill Book Company, Inc., 1930, Chap. VIII.

PUBLIC HEALTH NURSING SERVICE FOR URBAN PRESCHOOL CHILDREN¹

by MARIAN G. RANDALL, R.N.

THE most effective and economical use of public health nursing service for preschool children in urban areas is a problem of increasing importance. This is true since more emphasis is being given to the health problems of young children and since localization of public health administration in health center districts is developing in our large cities. Such questions as the following challenge the administrator: How can the objectives of health supervision be accomplished for the largest number of children in the area? Which children should have the most attention? If the Health Department cannot give unlimited service to them all, which ones shall be selected? What qualitative measures of the service can be used effectively? How much time can be given to the individual child, and what measures shall be taken to assure reasonable continuity of supervision? How shall the services rendered by private agencies in the district be correlated with the official services so as to avoid gaps on the one hand and duplication on the other?

Such questions, all of which represent different aspects of a single problem, have been kept in mind in the present analysis of services received by an unselected sample of children aged one through five in low-income families in the Bellevue-Yorkville health district of New York City. The aim of the study is to utilize actual practice as a guide in determining standards for public health supervision, with particular reference to public health nursing activities.

¹ From the Milbank Memorial Fund, New York City.

An analysis of services received by an unselected sample of children one through five years of age in low-income families in Bellevue-Yorkville district of New York City.

Acknowledgments are made to the personnel of the Health Department and the private agencies in the district whose cooperation in obtaining the information was of great assistance.

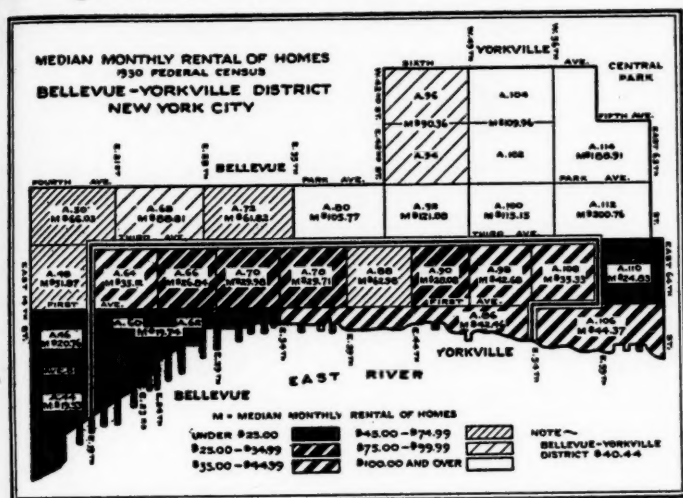


Fig. 1. Median monthly rental of homes in the Bellevue-Yorkville District, New York City, based on the 1930 Federal Census. The area outlined by triple lines indicates the section used for the special study of health services for preschool children.

THE SAMPLE

Except that they all belonged to families classified as "poor," there is no selection in the sample of 488 children, aged one to five years, used for this study.² They resided in the Bellevue-Yorkville District of New York City, indicated in Figure 1, which

² Comparison of the total preschool population in Manhattan Borough, New York City (1930 Census), with the total sample of preschool children studied, according to single years of age:

AGE	CHILDREN IN EACH AGE			
	Per Cent		Number	
	Total Population	Sample Studied	Total Population	Sample Studied
TOTAL	100.0	99.9	116,936	488
1 year	18.3	16.8	21,397	82
2 years	20.1	21.7	23,489	106
3 years	20.5	21.7	24,000	106
4 years	20.3	21.3	23,705	104
5 years	20.8	18.4	24,345	90

also shows the median rentals in 1930. Supplementary information concerning income, obtained from the families in this poor section, reveals (Table 1) that only five of the 323 families with preschool children had as much as \$2,000 per year, while half had less than \$800 per year. In more than one-third of this latter group the father was reported unemployed. Of all the families in this study, over one-third received assistance from a public or private welfare agency. The population of the area studied includes 40 per cent foreign-born and 35 per cent native-born of foreign-born parents, Italy and Ireland being the foreign countries most frequently represented.

In ascertaining what health services were rendered to these children, the records of the City Health Department and private agencies were examined, observations were made of nurses at work in homes and clinics, and inquiries were made in the children's homes by special investigators.³

Data were collected regarding each child who was at least one year of age at the time of the investigator's visit, and who had had some health service during the preceding twelve months. While the data collected for any child cover one year, the records for the various individuals do not coincide in time. However, all the twelve-month periods fall within the calendar years 1930-1932.

³ Information from the homes was obtained in connection with a Maternity and Infancy Study in the same area, by Dorothy Wiehl of the Milbank Fund staff.

Table 1. Yearly income of families containing preschool children in an area of the Bellevue-Yorkville District, New York City.

Income	Families with preschool children reporting each stated income	
	Number	Per Cent
TOTAL	323 ¹	99.9
Moderate + (\$2,000 and more)	5	1.5
Moderate (\$1,999—\$1,400)	52	16.1
Poor (\$1,399—\$800)	109	33.7
Very poor (Less than \$800)	157 ²	48.6

¹ Excluding 21 families for whom the income was not stated.

² Including 55 families who received no income because of unemployment.

AGENCIES GIVING HEALTH SUPERVISION TO PRESCHOOL CHILDREN

When the Bellevue-Yorkville Health Demonstration, jointly supported by the New York City Health Department and the Milbank Memorial Fund, was undertaken, many of the health and social agencies operating in the district were housed in the health center on East 38th Street. This prevented duplication of effort and facilitated cooperation.

The Official Agency. Three Health Department clinics in the district offered health supervision to preschool children. An attending physician gave health examinations and both he and the nurse instructed mothers in routine care necessary to keep children well. The nurses visited the homes to learn of the home conditions, to explain the importance of regular medical supervision, to assist the mother in carrying out clinic recommendations, and to give any further instruction needed in the care of children.⁴

The policies varied according to age. In the *Manual of Instructions* for New York City Health Department nurses it is stated that "Babies from one to two years should be supervised every month, and children from two to three years every three months." The written instructions do not mention children from three to five years, since the entire City program provides a limited amount of health supervision for these ages. But the Bellevue-Yorkville program was extended to the older preschool group, using the same general standards for frequency of supervision. The *Instructions* also state that supervision shall be "in the home or health station, but preferably the station." The emphasis in the Health Department program is put upon clinic supervision, a large part of the nurses' time being spent in clinic.⁵ It is the place provided for parents seeking advice about the health and care of

⁴ Cooperation and service were given by the City welfare organizations to families needing work and home relief.

⁵ In the three years represented in this study, approximately 32 per cent of the Bellevue-Yorkville nurses' total time was given to clinic services.

young children. It represents that newer phase of health department programs which supplements services for control of disease with education in practical rules for health. Since this program is that of an official agency, it is theoretically set up for *all* preschool children, but in actual practice there is a *selection* of cases.

Voluntary Agencies. The Bellevue-Yorkville District had at least as many private agencies concerned with the welfare and health of children as any district in the City.⁶ They could select and limit the cases served, according to their various policies.

SERVICES RECEIVED

Reports of public health nursing activities are often confined to volume of service,⁷ which is important for routine administrative purposes. In this study emphasis is placed on the detailed activities, shown by the extent to which services were rendered and relationship of services to special problems.

Extent of Total Clinic Services. How the program operated in the district is illustrated by the extent to which the 428 children who lived in the area the entire year received supervision from a Health Department or private agency.⁸ The clinic registration for the children of different ages is given in Table 2. Seventy-nine

⁶ These agencies include: New York Diet Kitchen Association, which conducts a clinic; Chapel of Incarnation, Prescott Memorial, and St. George's Clinics; Goddard Preschool Clinic; Friendly Aid Kindergarten, several day nurseries, and other small private organizations; and the Henry Street Visiting Nurse Association, which gives bedside care in the home during illness and makes follow-up visits for health supervision. Cooperation and service are also given by the Association for Improving the Condition of the Poor, the Charity Organization Society, Catholic Charities, Jewish Charities, and several smaller social agencies.

⁷ For the total sample of children a total of 608 home visits by Health Department nurses was reported for the study period, the 195 preschool children visited having an average of 3.1 visits per child. Fifty-six children were visited one or more times by public health nurses from the private agencies in the district. In addition, a total of 1,356 clinic visits was recorded (996 at Health Department clinics and 360 at private agency clinics), the 203 preschool children (excluding 20 children for whom number of clinic visits was not stated) who attended clinics having an average of 6.7 clinic visits per child. This is considerably more than the clinic supervision given in most urban areas. In the Appraisal Form for City Health Work the standard given for children 1-5 years is two home visits and two clinic visits per child registered, although it is recognized that this standard is generally considered low.

⁸ Sixty children were discharged; two died, 58 moved into or out of the district.

per cent of the one-year-olds had some clinic supervision as compared with 29 per cent of the four-year-olds. The intensive infant program was carried over to the one-year-old group, but in the

Table 2. The registration at private and official child health clinics in the Bellevue-Yorkville District, New York City, for an unselected sample of preschool children in low-income families by single years of age.

Age of Child	Number of Children	Children Registered at Clinic	
		Number	Per Cent
1-5 years	428	197	46.0
One	63	50	79.4
Two	95	49	51.6
Three	101	42	41.6
Four	89	26	29.2
Five	80	30	37.5

case-finding program more emphasis could profitably be directed to the older preschool children. The higher percentage for the five-year-olds attending clinics was due to the children getting ready for school who came to clinic for vaccination or physical examination.

The amount of clinic service varied with the child's age. Although the one-year-old children comprised only one-fourth of those attending preschool clinics, they returned more often than the older children and their visits added up to 45 per cent of the total. The amount of service for this age group was more than that of the combined groups aged two, three, and four years, although the children in these three groups made up two-thirds of the cases.

Arranging the distribution of services according to the frequency of visits made, it is seen, in Table 3, that 4 per cent of the children made 15 or more visits each and that these visits amounted to 29 per cent of the total. In the lowest frequency group, 1 to 4 visits, were 19 per cent of the children, and they received 15 per cent of the total clinic service. However, the majority, 56 per cent, of the children in the study had no clinic service.

The doctrine that district health programs shall be administered by the health department is becoming generally accepted. This

NUMBER OF CLINIC VISITS	NUMBER		PER CENT	
	Children Having Each Number of Clinic Visits	Total Clinic Visits	Children Having Each Number of Clinic Visits	Total Clinic Visits
TOTAL	412 ¹	1,246	99.9	99.9
None	231	0	56.0	—
1-4	78	188	18.9	15.1
5-9	61	414	14.8	33.2
10-14	25	284	6.1	22.8
15+	17	360	4.1	28.8

¹ Excluding 16 children for whom number of clinic visits was not stated.

Table 3. Frequency of visits to Health Department and private agency child health clinics for an unselected sample of children one through five years, in low-income families in the Bellevue-Yorkville District, New York City.

does not mean that the official agency must itself render all the service, which, in fact, it is not equipped to do; but it should coordinate the cooperation among all agencies serving the district. It seems particularly important that the health department in any city with localized service should assemble information as to which children are receiving supervision from other agencies, whose work is greatly needed and is of vital importance. Although 56 of the children in the sample studied attended clinics sponsored by private agencies, no record of this was found in the Health Department office.

Continuity of Health Department Clinic Supervision. Further discussion of distribution of services may be appropriately confined to the Health Department's activities. A qualitative measure of the service is the regularity with which clinic supervision is continued after registration.

In order to check up on regularity it is helpful to analyze the visits by quarters, as is done in Table 4, since the total of a year's visits could not serve as an index of continued supervision. Of the 428 preschool children studied, 172 had clinic record cards in the files of the Health Department, but only 141 of these children actually attended clinic during the year. Taking one clinic

PERIOD OF REGISTRATION	NUMBER OF CHILDREN REGISTERED IN EACH PERIOD	NUMBER OF CHILDREN ATTENDING CLINIC AT SOME TIME DURING YEAR	NUMBER OF CHILDREN CONTINUING CLINIC ATTENDANCE IN EACH QUARTER OF THE YEAR				NUMBER OF CHILDREN HAVING REGULARITY OF ATTEND- ANCE
			1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	
TOTAL	172	141					44
Prior to year	122	91	59	43	35	23	23
First quarter	19	19		13	11	8	8
Second quarter	12	12			8	5	5
Third quarter	10	10				8	8
Fourth quarter	9	9					

Table 4. Continuity of attendance at Health Department clinics in each quarter of the year for 172 preschool children who lived in the Bellevue-Yorkville District the entire twelve months studied, according to the time of registration at clinic.

visit in each quarter of the year as the standard, Table 4 shows that only 26 per cent of the children registered reached this standard. Going into more detail, the table shows that of the 122 children registered before the study period, 91 attended some time during the year, but only 59 attended in the first quarter. Of these 59 children, 43 returned in the second quarter, and by the end of the year only 23 of these had had at least one visit in each quarter. Similarly, following through the children who registered in the first, second, and third quarters, we get the total of 44, or the 26 per cent mentioned above as having a standard regularity of clinic supervision.

Frequency of Clinic Supervision. Since it is one of the objectives of public health nursing "to teach the value of medical supervision and to assist in obtaining this regular health supervision," it is of interest to analyze in further detail the clinic attendance of this sample of children. For routine supervision of healthy preschool children a clinic visit every three months may be prescribed as a general policy, but more frequent visits for the individual child may be advised because of some special need. The clinic physician determines at the time of each visit when each child should return. The present study shows for 333 visits (about

half of the clinic visits for the sample of children) there was a recommendation written on the clinic record for the time of the next visit. In Figure 2, these are distributed according to the per

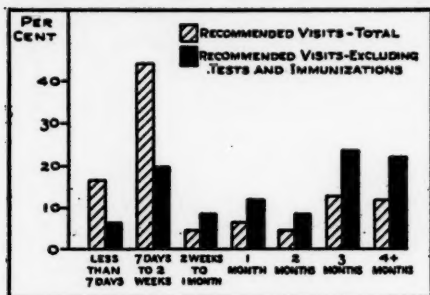


Fig. 2. Physicians' recommendations for return visits of preschool children to Health Department clinics.

advice was to return in less than one week. For most of the remaining visits the physician recommended that the next visit should occur in three or more months.

In most instances a record of the problem explains the recommendation. If the child was given a tuberculin test or a Schick test, or was vaccinated for smallpox, the physician would instruct the mother to bring the child back in two or three days in order to read the results of those tests. At the time this study was made, toxin-antitoxin was being used for diphtheria immunization and the physician's recommendation was to return in a week for the second and third doses.

These immunizations and special tests increase the percentage of successive visits with brief intervals of time, and increase the volume of attendance at a clinic session. While two or three clinic visits for a few children for the giving and reading of some special

¹⁰ In the analysis of services to a sample of children who were 1-5 years of age on a given date, some of the previous year's services to the one-year-old group would have occurred when the children were in the infant period. It is necessary to include these when considering the services received by the sample of children. But in this analysis of clinic visits only those visits occurring when the children were of preschool age (1-5) will be included. In other words, it will represent a cross section of preschool clinic practice.

cent of visits recommended for each interval of time.¹⁰ The hatched bar represents all these visits, regardless of the problem, and indicates that the most frequent recommendation was to return in seven days to two weeks. For a smaller number of the visits the

test greatly increase the total clinic visits, in terms of continued health supervision over a period of time this does not mean that the average visits per child either meet or exceed a given standard. Such problems as these suggest the value of further classification of clinic visits in planning the administration of clinic services.

Excluding visits for these immunizations and tests, the distribution of all other clinic visits according to the interval of time recommended for return is also shown in Figure 2 by the black bar. In this group the recommendation for return in less than two weeks was due to some symptom of illness or other acute condition which led the physician to advise an early return.

How Were These Recommendations Carried Out? A type of analysis which could be used profitably is suggested in Table 5, which relates the performance of return clinic visits to the recommendation for them. Nearly one-third of the clinic visits corresponded exactly with the physician's recommendation. One-fifth of the visits were made early, over two-thirds were late and approximately one-eighth were never made.

Over two-thirds of the visits recommended to return in less than a week were promptly made and over one-third of those recommended to come within two weeks were made on time. But if an interval of four or more months was advised, the parents were evidently not willing to wait that long and brought the children back to clinic at an earlier date. Twenty per cent of all the clinic visits occurred before they were due, the reason being, according to the records for half of these visits, that a symptom of illness, an economic problem, a wish to weigh the child or to report the correction of a defect, had prompted the mother to bring the child back to clinic sooner than she had been advised. For the other children no reason was given for an early return. In some instances of early visits there might have been a need that was not recorded on the clinic card, but in general this

group represents families who demand more service than it is possible to give to all the children registered in clinic.

As shown in Table 5, there were 119 tardy visits, and the extent of tardiness is shown in Figure 3. Over half were less than two weeks late, while a sixth of the visits were two or more months overdue when the children finally returned to clinic.

While the percentages in Table 5 and Figure 3 give the actual facts about clinic attendance, it would require some modification to make these data suitable for practical use in the follow-up of clinic cases. Strictly speaking, the child who is told to return to

Table 5. Extent to which visits to Health Department preschool clinic correspond with the physician's recommendation for return visits.

RECOMMENDED INTERVAL OF TIME	TOTAL CLINIC VISITS	RELATION OF CLINIC VISITS TO RECOMMENDATION			
		On Time	Not on Time		Did Not Return
			Before Recom- mendation	After Recom- mendation	
PER CENT					
TOTAL	100.0	32.3	20.1	39.3	8.3
Less than one week	100.0	69.1	—	30.9	—
Seven days-less than two weeks	99.9	37.2	4.8	50.3	7.6
Two weeks-one month	100.0	11.4	31.4	34.3	22.9
Two months-three months	99.9	4.4	51.1	31.1	13.3
Four or more months	100.0	—	87.0	13.0	—
NUMBER					
TOTAL	303 ¹	98	61	119	25
Less than one week	55	38	—	17	—
Seven days-less than two weeks	145	54	7	73	11
Two weeks-one month	35	4	11	12	8
Two months-three months	45	2	23	14	6
Four or more months	23	—	20	3	—

¹ Excluding 30 visits for which the time interval recommended for the return visit had not elapsed by the end of the period studied.

clinic in ten days, for example, is late if he returns the fourteenth day. But in actual practice it would not be practical to classify the child as delinquent for missing the exact day. A period of grace is advisable. Just as a classification might be made by those administering a clinic, an estimate has been made here of those visits which were late enough to warrant some follow-up service and which, when added to those who did

not return to clinic, form the problem of delinquency.¹¹

Supervision of Clinic Delinquency. It is a policy in the Health Department clinic to mail postal cards to remind parents that the child should return to clinic, and it is also planned, when possible, for the nurse to visit the home to urge that the child return to clinic. In analyzing clinic delinquency which may occur with reference to any visit, it is necessary to continue using a visit as the unit; and, since the nurse is concerned about the regular attendance of all the clinic cases, the visits without a written recommendation for return may be added. There must, of course, be some basis of judging clinic delinquency if no special recommendation for return is charted on the clinic record, and here the nurse may use the standard for frequency of supervision suggested by the Health Department's written policy. This was used in the following analysis, and these additional visits were also classified according to relatively major and minor problems, since the relative severity of the problem involved would be expected

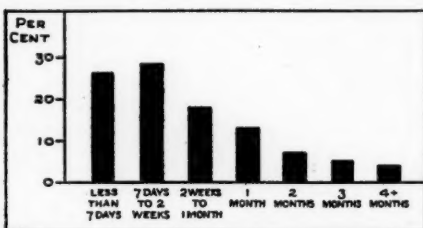


Fig. 3. Length of time 119 tardy clinic visits were overdue. In addition to these there were 25 that never returned.

¹¹ If, for example, the next visit was advised in two or three weeks and the visit was made in seven days to two weeks or in one month, it was classified as approximately on time. If, however, the next visit was made in two months, it was classified as delinquent.

TYPE OF SERVICES GIVEN FOR CLINIC DELINQUENCY	ALL OVERDUE CLINIC VISITS		VISITS HAVING MAJOR PROBLEMS		VISITS HAVING MINOR PROBLEMS	
	Number	Per Cent	Number	Per Cent	Number	Per Cent
TOTAL	275	100.0	192	99.9	83	100.0
None	192	69.8	138	71.9	54	65.1
Home visits only	45	16.4	35	18.2	10	12.0
Post cards only	26	9.4	12	6.2	14	16.9
Home visits and cards	12	4.4	7	3.6	5	6.0

Table 6. Type of services given by the Health Department for a sample of overdue visits to preschool clinic and the services given for these visits in which there were major and minor problems.

to influence the efforts made to bring about a return to clinic.¹²

Of 615 clinic visits expected, 275 were classified as overdue. This delinquency problem is analyzed in Table 6, where tardy visits are tabulated according to the efforts put forth to remedy delinquency. No service for clinic delinquency was recorded for 70 per cent of the overdue visits. Home visits were made for 16 per cent, post cards were mailed for 9 per cent, and both visits and cards were recorded for 4 per cent of these overdue visits. The figures for post cards may not tell the whole story, since the sending of reminders may not always have been recorded. The lack of services for delinquency was somewhat larger for cases with major problems than for those with minor problems. Also, from the standpoint of time when services were given, further analysis shows that overdue visits for children with major problems were not followed up any more promptly than those with minor problems. But as Table 6 shows, when services were given, major problems more often received home visits from the nurse and minor problems more frequently received post cards. However, the percentage of return visits for those cases for which some effort was made to get the child to return was no higher

¹² This arbitrary grouping was based on information on the clinic records. Nutrition and defects marked 3x or 4x, immunizations and special tests, and other conditions recorded as serious were called major problems, while the 1x and 2x defects and less serious conditions were called minor problems.

TYPE OF SERVICES GIVEN FOR CLINIC DELINQUENCY	TOTAL OVERDUE CLINIC VISITS	RESULTS ACCOMPLISHED IN TERMS OF A RETURN VISIT TO CLINIC	
		Number	Per Cent
TOTAL	275	210	76.4
None	192	152	79.2
Home visits only	45	30	66.7
Post cards only	26	22	84.6
Home visits and post cards	12	6	50.0

Table 7. Results in terms of a return visit to clinic following each type of service given by the Health Department, for an unselected sample of overdue visits to preschool clinic.

than for those whose delinquency apparently was given no special attention. This may be seen from a study of the figures in Table 7.

The same children were sometimes delinquent more than once. There were 125 children who did not return to clinic promptly, 75 of them being delinquent twice, 43 three times, and 31 four or more times. But the children who were repeatedly delinquent rarely received repeated follow-up services; only three of the 63 children who were visited in the home because of clinic delinquency were visited again because of a second delinquency. Repeated efforts would probably bring very few return results and, in any case, the parents should assume due responsibility.

Immunizations. One objective of the public health nursing program is to assist in securing immunizations against disease. This part of the program has been carried out with marked success; 55 per cent of the sample had been immunized against diphtheria and 51 per cent had been vaccinated against smallpox. It is evident that, in low-income families, clinic attendance is one of the biggest factors in securing these results, for over 80 per cent of the children who had attended child health clinics in the district received protection against diphtheria, while only 30 per cent of the children who had not attended clinics were immunized against this disease.

Illnesses. Information from the family revealed that exactly

TYPE OF CARE RECEIVED ¹	FOR 339 ILLNESSES		FOR 179 MAJOR ILLNESSES		FOR 160 MINOR ILLNESSES	
	Number	Per Cent	Number	Per Cent	Number	Per Cent
Private physician	47	13.9	39	21.8	8	5.0
Hospital	46	13.6	44 ²	24.6	2	1.3
Hospital clinics	33	9.7	18	10.1	15	9.4
Health Department						
Diagnostician	13	3.8	13	7.3	—	—
Clinics	129	38.1	51	28.5	78	48.8
Nurses' home visits	43	12.7	31	17.3	12	7.5
Private agency						
Clinics	55	16.2	18	10.1	37	23.1
Home visits—Henry Street nurses	35	10.3	17	9.5	18	11.3
No care	30	8.8	18	10.1	12	7.5

¹ Each type of care as listed is independent of all other types of care.

² Includes 2 children who went to convalescent home.

Table 8. The extent of different types of care received for the illnesses that occurred in twelve months for an unselected sample of preschool children in low-income families in the Bellevue-Yorkville District, New York City.

half of the preschool children had no illnesses. The other half had one or more illnesses during the year. Some of these were relatively slight disturbances, so that sicknesses reported were classified as major or minor illnesses.¹⁸ In Table 8, the incidence of illness is represented by a total of the two most important illnesses reported for each child. In analyzing the extent of care received for these illnesses, each type of care here given is independent of all other types.

It is not surprising to find that so large a percentage of the illnesses were given some service at the Health Department clinics, especially for the minor illnesses, since the mother who is accustomed to taking her child to the clinic naturally returns there when

¹⁸ In this arbitrary grouping, when illnesses such as vomiting, cough or cold, red throat, stomach upset, and the like were reported as not being severe, they were called "minor" illnesses; while intestinal disturbances, acute respiratory, communicable disease, or other acute conditions were classed as "major" illnesses.

the child is ill. If symptoms warrant it, the clinic physician refers cases to a private physician (if the family can afford it) or to the hospital pediatric clinics. This is not shown, since each service is tabulated separately.

But, remembering that these children are all in low-income families, it is interesting to find that 22 per cent of all major illnesses had some service from private physicians. The same per cent of infant illness in this district had service from private physicians.¹⁴ The Health Department diagnostician gave service to 7 per cent of the major illnesses, mostly communicable disease. Most of the hospital care was given in City hospitals. The Henry Street Visiting Nurse Association does not refuse home nursing care if the family cannot afford to pay for it. For 30 illnesses, 18 of which were major, no care was received.¹⁵

Nurses' Home Visits. The home visits made by the Health Department nurses cannot be considered apart from other activities. They constitute one means of accomplishing the various objectives of the program, and have been referred to in the foregoing paragraphs in relation to various phases of the work. The distribution of these total visits shows that 59 per cent of the children were not visited; 9 per cent of the children were visited once, 5 per cent four times, and 9 per cent five times or more. This latter group actually received 46 per cent of the total home visits. Some of these children visited several times had major problems, but for others who were also attending clinic regularly, there were only relatively minor problems recorded.

Fourteen per cent of the children who attended clinic were not visited in the home, while 16 per cent of those attending clinic

¹⁴ Randall, M. G.: Public Health Nursing Service for Infants. *Milbank Memorial Fund Quarterly*, April, 1935, xiii, No. 2, p. 197.

¹⁵ In addition there were two illnesses with fatal results. Both had hospital care. One child, four years old, died of poliomyelitis, the other, one year old, of gastro-enteritis. Both children had been visited in the home by the Health Department nurse and both were registered in the Health Department clinic. During the year they had attended clinic once and three times respectively.

had five or more home visits. Of the 287 children not attending clinic, 54, or 19 per cent, received one or more home visits. Six per cent of these children not attending clinic had five or more home visits.

It is necessary to consider continually the relative needs for service. The nurses' interest in the problems of an individual child is a most valuable asset in any community, and careful intensive health supervision for a few children may make the best contribution to the health work in the district. But the children who receive the most intensive services should be the ones who need it most.

In describing visits that nurses make in the homes of preschool children, reference is usually made to "teaching newer methods for maintenance of health and prevention of disease." It is always difficult to learn from the nurses' records the complete content of the home visits. Probably not every point can be charted. But

it is interesting to learn the extent to which the content of the visit is recorded and the extent to which some of the more usual points are included in a sample of visiting. This is shown in Table 9.

In a sample of 470 home visits, the nurses most frequently recorded a discussion of general hygiene. Clinic delinquency was the next item most

Table 9. Extent to which given subjects of discussion were recorded as part of the content of an unselected sample of 470 home visits made by Health Department nurses to preschool children in the Bellevue-Yorkville District in New York City.

Subjects Recorded as Content of Home Visits	Visits Having Given Subject Recorded	
	Number	Per Cent
General hygiene	185	39.3
Clinic delinquency	134	28.5
Illness	122	25.9
Nutrition	101	21.5
Relief	62	13.2
Clinic attendance	55	11.7
Immunizations	36	7.6
Correction of defect	27	5.7
Behavior problem	3	.6

often recorded, and some illness or symptoms of illness came third in frequency. The limitations in recording of the content of home visits prevent this from being a complete picture, but there are

relative differences in the frequency of items which are significant in giving an account of the visits the nurses make in the homes.

Extent of All Health Services. A summary of the foregoing

Table 16. Extent to which health services were received by preschool children who lived the entire year in low-income families of the Bellevue-Yorkville District, New York City.

Services Received	Infants Receiving Each Specified Service	
	Number	Per Cent
TOTAL	428	
No public health service	157	36.7
One or more services	271	63.3
Agency giving service		
Health Department	201	47.0
Private agencies	124	29.0
Type of service		
Clinics		
Health Department clinics	147	34.3
Private agency clinics	57	13.3
Hospital pediatric clinics	31	7.2
School examinations	12	2.8
Country care	11	2.6
Home visits		
Health Department nurses	175	40.9
Henry Street nurses ¹	21	4.9
Other agency nurses	32	7.5

¹ Excluding visits for morbidity service.

were available. And this is especially significant since a study of infant services revealed that only 6 per cent of the infants in this same area did not receive some health supervision.¹⁰ According to the general plan to give supervision throughout the period of childhood, it would be expected that a higher percentage of the preschool children would continue under supervision.

There were 233 preschool children who had no Health Department service, and in the families of 151 of these, another member

¹⁰ *Op. cit.*

analyses for the total sample of preschool children who lived in the district the entire year is shown in Table 10. It illustrates the extent to which these children received the different types of services available in the district. For this table a child may have been counted in one or more of the groups. In fact one-eighth of these children received services from both public and private agencies. It is significant that 37 per cent of the children had no health supervision in a district where so many services

of the family received some service from the Health Department. An infant was visited by the Health Department nurse in the homes of 114 of these preschool children but no record was found that indicated a knowledge of these older children. And a school child was visited by the Health Department nurse in the homes of 79 of these preschool children.

SUMMARY

An analysis of the public health nursing services for an unselected sample of children ages one through five years, living in a low rental area of the Bellevue-Yorkville District of New York City, shows that either public or private agency services were extended to 63 per cent of the children in these low-income families. Two-thirds of the children who had service received an amount considerably above the generally accepted standards.

Nine per cent of the children received 46 per cent of the nurses' home visits, while 59 per cent of the children were not visited. Four per cent of the children received 29 per cent of the total clinic service, while 56 per cent of the children did not attend any clinic. From information on the clinic records, some of the children having repeated services had no more serious problems than some of the children having a limited amount of supervision. This leads one to remark that intensive services for a few children may make the most valuable contribution to the health program of a district only when the children who receive them are the ones most in need of services.

The Health Department program emphasizes services offered in child health clinics. A qualitative measure of these services is shown by the continuity of supervision. Upon the basis of at least one visit to clinic in each quarter of the year, 26 per cent of the children registered in Health Department clinics had regularity of supervision.

At considerably over half of the Health Department clinic visits

involving some major problem, the physician recommended a return visit to clinic in less than two weeks. Immunizations, tuberculin, and other special tests necessitating return to clinic in a short time greatly increase the percentage of successive visits which occur during brief periods of time. There should be provision for these extra clinic visits, which increase the volume of clinic attendance, but they need not necessarily be included in the plan for average visits per child for continued health supervision. Classification of clinic visits by problem would facilitate planning for clinic services.

Excluding visits for these special immunization problems, the most frequent recommendation of time for return to clinic is approximately three months. The age of the child influences the recommendation for return to clinic, the one-year-old children having more frequent supervision than the older children.

How recommendations for return to clinic were actually carried out is shown by the fact that 32 per cent of the sample of clinic visits were on time, 20 per cent occurred before they were due, and 39 per cent were late visits, leaving only 8 per cent with failure to return.

An analysis of the problem of clinic delinquency reveals that there was no follow-up for 70 per cent of the overdue visits. The delinquent cases with major problems were not followed up any more promptly than those with minor problems. When reminders were given, however, post cards were sent to cases with minor problems, while the cases with major problems were more often visited in the home by the nurse.

A commendable record was attained in the immunization program of preschool children, 55 per cent having been immunized against diphtheria and 51 per cent vaccinated against smallpox.

Clinic services were extended to 79 per cent of the one-year-old children, to 42 per cent of the three-year-olds, and to 38 per cent of the five-year-old children. Doubtless in a program of case-

finding more emphasis could profitably be directed toward the older preschool children.

In the families of 151 preschool children for which there was no record of health supervision services, other members of the family had some Health Department nursing service. Considerable case-finding can be accomplished in a generalized program, if effort is directed toward bringing under supervision all the young children in the families in which other phases of the health program are being carried out.

For the children receiving health supervision services from private agencies in the district, no records were found in the Health Department indicating that any supervision was being given. In this connection one may add that, to make the best use of combined services in a district, it would seem advisable for the official agency to take the leadership in coordinating the cooperation of all the agencies to obtain the most effective distribution of services among the entire population. This would include the assembling of information as to which children are receiving health supervision from other agencies in the district.

FERTILITY OF HARLEM NEGROES

by CLYDE V. KISER¹

A SOCIAL change of much importance during the period intervening between the World War and the present depression was the movement of Negroes to northern urban centers. In New York City, for instance, the Negro population increased 66 per cent from 1910 to 1920 and 115 per cent from 1920 to 1930, at which time there were 327,706 Negroes in the City. Less spectacular but no less fundamental than the population transfer itself is the problem of birth rates among urban Negroes. The growth of Negro population in cities has been so conspicuous it is little wonder some people cling to the idea that high fertility rates are generally found among them. It is true that even in some northern urban centers the annual birth rates of Negroes are as high or higher than those of whites. As ordinarily given in terms of births per 1,000 population, however, annual rates are crude indices for comparison. They do not take into account such factors as nativity, age and sex distribution, proportions married, and social class differences in fertility. The above and other factors should be held constant in comparing the fertility rates of Negroes and whites.

Previous studies of differences in birth rates by social class reported on by the staff of the Milbank Fund² have been confined to white women. In order to secure similar data for a group of urban Negroes, a house-to-house survey among 2,256 Harlem Negro families was made by special enumeration in 1933.³ The

¹ From the Milbank Memorial Fund.

²(a) Sydenstricker, E., and Perrott, G. St. J.: *Sickness, Unemployment, and Differential Fertility*. The Milbank Memorial Fund *Quarterly*, April, 1934, xii, No. 2, pp. 126-133.

(b) Notestein, F. W., and Kiser, C. V.: *Fertility of the Social Classes in the Native White Population of Columbus and Syracuse*. *Human Biology*, December, 1934, vi, No. 4, pp. 595-611.

(c) Lists of earlier population studies may be found in the 1930-1933 annual reports of the Milbank Memorial Fund.

³ The immediate occasion for undertaking the survey in 1933 was the opportunity

(Continued on page 274)

area chosen for study lies between 126th and 135th Streets and between Lenox and Eighth Avenues. This section, known as Health Area 12, was chosen because available census tract data pertaining to rentals, and to general, infant, and tuberculosis mortality indicated it to be neither the best nor the worst economically or socially. It appeared to be a "middling" Harlem section.

The schedules provided basic fertility data relating to nativity, date and duration of marriage, age of the husband and wife, usual or last occupation of the husband, and a complete birth-date roster of all children born. In addition, a variety of descriptive material was secured for each family, including religion and education of the husband and wife, place of residence since marriage, and employment and income history of all members of the household since 1929.

In this paper, survey data are presented pertaining to the birth rates of Negroes of different occupational groups. Other sources are drawn upon for a discussion of the general levels of fertility among Harlem Negroes.

The basic data for Negroes have been handled in a manner similar to that followed in previous studies of white women. The same occupational code was used for the division of families into broad social classes on the basis of the husband's usual occupation. The samples upon which the rates in Table 1 are based were confined to married women of childbearing age who were living with their husbands at the time of the enumeration. The data were further confined to unions in which the husband and wife were of similar nativity and neither had been married more than once.

After the above restrictions were made, the samples of native colored women of the white-collar class and of foreign-born colored women in general were too small to afford conclusive to utilize Negro "white-collar" investigators in collaboration with the Emergency Work and Relief Bureau. With the help of white enumerators from the Bureau, a similar investigation was carried on at the same time in the Bushwick section of Brooklyn. The enumerators were closely supervised and were required to demonstrate a thorough knowledge of the schedules and instructions before going to the field.

evidence of social class and nativity differences in the fertility of urban Negroes. From the data in Table 1, however, it appears probable that the native white-collar workers are a little less fertile than the native women of the laboring class and that these, in turn, are less fertile than foreign-born laborers. The total rate standardized for age among the native women of white-collar status was 85 births per 100 wives as compared with 97 among native laborers and 160 among the foreign-born laborers. On the other hand there appears to be little or no difference between the fertility rates of native skilled workers and those of native unskilled laborers, and these two groups are the largest among Harlem families.

In considering the above differences it should be borne in mind that the numbers in certain classes were small and also that all samples were drawn from the same general area in Harlem. It is possible that different results would have been obtained if adequate samples had been secured from several small areas of extremely different economic hue.

More conspicuous than differences in the fertility of constituent classes in Harlem is the generally low level of the rates in that

Table 1. Total number of children born alive per 100 Negro wives of child-bearing age and of specified nativity and occupational groups.

NATIVITY AND OCCUPATIONAL CLASS	BIRTHS PER 100 WIVES				NUMBER OF WIVES			
	Total Rate Standardized for Age ¹	Age-Specific Rates						
		15-24	25-34	35-44	Total	15-24	25-34	35-44
<i>Native Negro</i>								
White collar classes	85	14	33	38	128	30	71	27
All laboring classes	97	16	41	40	721	206	368	147
Skilled workers	95	14	41	40	316	84	164	68
Unskilled laborers	98	17	41	40	405	122	204	79
<i>Foreign Negro</i> ²								
Laboring classes combined	160	14	67	78	104	11	46	47

¹ Standardized by applying the age distributions of samples of 65,070 native-white married women under 45 years of age drawn from the 1910 Census. This standard was used in order to compare the fertility rates of whites and Negroes, Table 2.

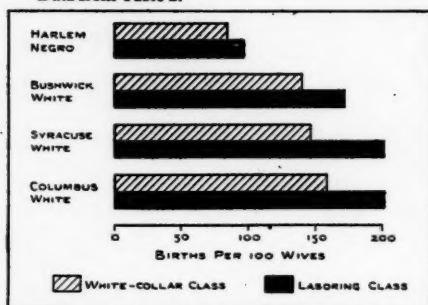
² Chiefly from the West Indies.

AREA	BIRTHS PER 100 WIVES		NUMBER OF WIVES	
	White-Collar Workers	Laborers	White-Collar Workers	Laborers
<i>Negro</i>				
Harlem	85	97	128	721
<i>White</i>				
Bushwick	140	172	563	917
Syracuse	147	202	571	538
Columbus	159	202	678	518

Table 2. Standardized birth rates per 100 wives of childbearing age among native Negroes and whites in specified communities and occupational groups.

area. At this time it is impossible to present rates of a similar type for a white population in Manhattan Borough.⁴ However, we do have comparable data for a white population in the Bushwick section of Brooklyn. It is true that Bushwick is somewhat removed from the metropolitan congestion of Manhattan. Indeed it is

Fig 1. Comparison of standardized birth rates of native Negroes with those of native whites of similar age and occupational level. Data from Table 2.



something of a "family section." However, while the birth rates among native wives of this area are doubtless higher than those of white married women of the same nativity and occupational level in Manhattan, they are not high as compared with the similar rates found

in Syracuse, New York, and Columbus, Ohio.⁵ (See Table 2.)

The rates shown in Table 2 and Figure 1 indicate the generally low fertility of the Negroes in the survey as compared with that observed among white women of similar or even higher occupa-

⁴ In a later paper similar rates will be presented for white populations in selected areas of Manhattan.

⁵ See footnote 2 (b).

tional level in Bushwick and other urban communities. The total standardized rate for native-white wives of the white-collar class in Bushwick was 140 births per 100 wives of childbearing age, a rate which is 65 per cent higher than that for Harlem women of the same broad occupational class and 44 per cent higher than that for Harlem laborers. The rate for Bushwick native laborers was 172 births per 100 wives or 77 per cent higher than that for Harlem laborers.

Still further refinements of the data were made to test the possible influence of age at marriage, duration and time of marriage, and place of residence since marriage. For purposes of comparison these restrictions could be made only for the laboring classes specified in Table 3 and Figure 2. The data were restricted to women who married in 1920 or later, were under 30 years of age

Table 3. Cumulative birth rates per 100 wives in successive years of married life in selected¹ native laboring groups of Harlem and Bushwick.

COMPLETED YEARS MARRIED	BIRTHS PER 100 WIVES		NUMBER OF WIVES	
	Harlem Negro Skilled and Unskilled	Bushwick White Skilled	Harlem Negro Skilled and Unskilled	Bushwick White Skilled
1	18	21	498	475
2	40	61	445	442
3	56	88	377	400
4	66	108	318	361
5	78	124	262	322
6	85	142	201	284
7	92	156	156	252
8	98	164	130	210
9	100	174	101	165
10	107	186	68	126
11	116	196	47	85
12	116	198	26	46

¹ The data relate to women married in 1920 or later at ages under 30. All had lived in New York or other northern cities since marriage.

Since the fertility rates for Negroes of skilled and unskilled status were not significantly different, the two classes were combined to increase the sample.

at the time of marriage, and since marriage resided in New York or in another northern city before coming to New York. Birth rates per 100 wives were computed separately for successive years

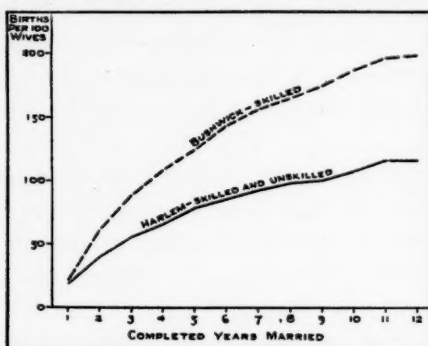


Fig. 2. Comparison of cumulative birth rates of Negroes with those of whites in selected laboring groups. Data from Table 3.

of married life and these were cumulated for indices of total number of children born in successive years. The results of this tabulation clearly indicate that the exceedingly low rates in Harlem persist when the above mentioned factors are virtually held constant.

The best available comparison of birth rates of Harlem Negroes with those of southern colored women is afforded by Census data and vital statistics reports for 1930.⁶ In Table 4 it will be seen that in that year there were 91 births in Central Harlem per 1,000 married colored women of childbearing age as compared with 187 and 188 respectively in Virginia and North Carolina, two states which have been in the birth registration area since 1917. Similar rates for Birmingham and Atlanta were as low as the rate for colored women in New York City as a whole, but it is possible that birth registration is not as complete in those southern cities although they have been in the registration area since 1928. In Richmond, Virginia, the

⁶ The number of married women of childbearing age in the southern areas and in New York City and its boroughs in Table 3 were secured from published 1930 Census data. For Central Harlem and Manhattan exclusive of Harlem, figures were estimated from unpublished 1930 Census data furnished by the Welfare Council of New York City. The numbers of births were obtained from the 1930 Federal report, "Birth, Stillbirth, and Infant Mortality Statistics" and from "Vital Statistics by Health Areas," New York City Department of Health, 1930. In this paper rates from official data are given only for the year 1930, due to uncertainties of population changes since the Census.

AREA	BIRTHS PER 1,000 MARRIED WOMEN 15-44 YEARS OF AGE	NUMBER OF MARRIED WOMEN 15-44 YEARS OF AGE
TOTAL NEW YORK CITY	113	67,994
<i>Boroughs</i>		
Manhattan	105	47,283
Central Harlem	91	30,321
Manhattan, exclusive of Central Harlem	130	16,962
Bronx	148	2,431
Brooklyn	139	14,009
Queens	96	3,846
Richmond	129	425
SELECTED SOUTHERN AREAS		
Virginia	187	84,263
North Carolina	188	124,263
Richmond, Virginia	136	8,880

Table 4. Number of live births in 1930 per 1,000 colored married women of childbearing age in specified areas of New York City and the South.

rate was 136 births per 1,000 colored women of childbearing age in 1930.

The birth rates computed from official sources also show that Central Harlem is an especially low birth rate area of the New York City colored population. The 1930 birth rate per 1,000 colored married women of childbearing age was 91 in Central Harlem as compared with 130 among colored women in other parts of Manhattan Borough. With the exception of the rate in Queens, the rates among colored women in other boroughs extended from 129 to 148. It appears, therefore, that the low rate in Harlem is in part due to intra-city selective processes.⁷

⁷ Back of the intra-city selective factors is the possibility of selection with regard to the major interests of Negroes who migrated to New York from southern areas. Perhaps the Negroes who came to northern cities are largely those who attach more importance to independence and new experience than to family life. This factor may affect the present fertility of urban Negroes due to the recency of the Negro migration, and possibly exists to a greater degree among Negroes in Harlem than among those in other parts of the City. This is obviously an intangible factor and it would be difficult to establish or refute with certainty its presence or importance.

Among such intra-city selective factors tending to bring about a low birth rate in Harlem, high rentals probably occupy an important place. While it may not be commonly realized, the 1930 median rental in Harlem was \$52 per month as compared with \$44 in the whole of Manhattan and \$46 in Greater New York, white and colored combined.⁸ The Harlem median rentals for 1930 were strikingly higher than those in certain Manhattan areas of foreign-white residents. For example, in Health Area 60 of the Lower East Side.⁹ While these figures present a picture somewhat the 1930 median rental was only \$20.

The amount of rent per room per month indicates that the foregoing comparisons may be somewhat exaggerated due to the presence of large flats in Harlem. These data, as of 1934, are available from the recent reports of the "Real Property Inventory." The rent per room per month was found to be \$7.47 in Central Harlem, \$7.77 in all Manhattan, and \$5.27 in Health Area 60 of the Lower East Side.⁹ While these figures present a picture somewhat different from that concerning total rentals, they indicate the reality of relatively high rents in the Negro area.

That the proportion which such rents bear to family incomes in Harlem is also high is shown in an intensive family income study of six "typical blocks" in Harlem recently conducted by the New York City Housing Authority.¹⁰ According to this report,

⁸ "Statistical Reference Data, Five-Year Period 1929-1933," compiled by G. J. Drolet and M. P. Potter under the direction of K. D. Widdemer, Committee on Neighborhood Health Development, Department of Health, New York City, 1935. This same report affords graphic comparisons of rentals in three Manhattan health center districts which are designated as "sore spot" areas with reference to mortality rates. One of these areas is Central Harlem and the others are East Harlem and the Lower West Side. In large part the latter two are areas of foreign-white residents. Presumably the three areas are fairly comparable with reference to economic circumstances of the residents, but the 1930 median rental was only \$35 in the Lower West Side and \$30 in East Harlem as compared with \$52 in Central Harlem.

⁹ The above figures were computed from relevant data in the Manhattan section of the report, "Real Property Inventory," The New York City Housing Authority, 1935.

¹⁰ "Harlem Family Income Survey," New York City Housing Authority, Harlem

the average income received by 1,990 families in the six blocks was \$76.80 per month and the average rental per month was \$30.39, or 39.9 per cent of the income.

The low income status of Harlem Negroes revealed in the above mentioned study is borne out by our own survey data. An analysis of the total family incomes in 1929 and 1932 among the Harlem Negroes surveyed indicated that almost one-fourth of the families received less than an average of \$100 per month in the pre-depression year and that almost 60 per cent received less than this amount in 1932. During this period the median yearly family income fell from \$1,808 to \$1,019, a decline of about 44 per cent.¹¹

The economic pressure of such low incomes, coupled with high rents, has necessitated the gainful employment of wives. As is generally known, birth rates among employed women tend to be low, and the high proportion of Negro wives who contribute to the family income undoubtedly is an important factor underlying the low fertility of Harlem Negro marriages. Including those who took in lodgers, 61 per cent of the native-colored wives in the Harlem survey reported at least some gainful employment. The outstanding occupations were those of housework and other domestic and personal services. Only 17 per cent of the native-white wives in the Bushwick survey reported gainful employment of any kind.

An adequate interpretation of the low fertility rates of Harlem Negroes would involve a careful analysis of factors other than

Branch, Will Thomas Williams, Location Director (Unpublished document, pp. 5, 20).

See also "Harlem 1934: A Study of Real Property and Negro Population." Prepared for The New York City Housing Authority, 1935.

¹¹ The significance of this decline is emphasized by the much smaller decline in cost of living during this time. According to figures published by the United States Bureau of Labor, the cost of living index for wage-earning and low-salaried families in New York City declined only 17 per cent from June, 1929, to June, 1932. A more detailed analysis of this whole subject of income changes among Harlem families may be found in an article by the writer: Diminishing Family Income in Harlem. *Oppportunity*, June, 1935, xiii, No. 6, pp. 171-173.

those relating to economic pressure. For instance, the high incidence of venereal diseases among urban Negroes is sometimes mentioned as a direct cause and this factor probably does account in some measure for the low birth rates. The evidence for this is indirect, but it is interesting to note that from 1929 through 1933 the annual average rate of total venereal disease new case registration per 100,000 population was much higher in Central Harlem than in any other health center district of the City. This rate was 3,133 as compared with 653 for the City as a whole, a ratio of almost five to one. The rate was about three times higher than in the Lower East Side.¹² In spite of well-known inadequacies of such data, referring as they do only to registered cases, there is little doubt that both gonorrhea and syphilis are more common among Negroes of the City than among whites.

It is not possible to measure the force of these diseases on birth rates. However, it is generally accepted that at least temporary sterility may be induced by gonorrhea as a result of inflammatory changes in the genital organs of males or females. While there is not universal agreement as to the importance of syphilis on the outcome of pregnancies, it is interesting to note findings from a few studies. From data in "Syphilis in Pregnancy,"¹³ one of the cooperative clinical studies, it has been computed that 24.5 per cent of the 607 pregnancies of women under observation or treatment for syphilis terminated in miscarriages, stillbirths, and abortions. McCord,¹⁴ in a study of pregnant women with four plus Wassermanns, found that among 212 non-treated cases, 33.6 per cent of the pregnancies terminated as premature and full-term

¹² Statistical Reference Data. *Op. cit.*, p. 87.

¹³ Cole, H. N.; Moore, J. E.; O'Leary, P. A.; Stokes, J. H.; Wile, U. J.; Clark, T.; Parran, T.; Vonderlehr, R. A.; and Usilton, L. J.: *Syphilis in Pregnancy. Venereal Disease Information*. United States Public Health Service, March, 1934, xv, No. 3. Data used were taken from Table II, p. 19.

¹⁴ McCord, J. R., M.D.: "Syphilis and Pregnancy," a chapter in *FETAL, NEWBORN, AND MATERNAL MORBIDITY AND MORTALITY*, a publication of The White House Conference on Child Health and Protection. New York, D. Appleton-Century Company, 1931, p. 65.

stillbirths. An earlier report issued by the New York Association for Improving the Condition of the Poor¹⁵ and pertaining to colored women of the Columbus Hill section of New York City, indicated that 24.5 per cent of 449 total past pregnancies of untreated and unsupervised syphilitic women ended in stillbirths and miscarriages.

Thus the above studies may appear to show that from one-third to one-fourth of the pregnancies of syphilitic women terminate in stillbirths, miscarriages, and spontaneous abortions. Similar data for a selected white population in which there is presumably a small incidence of syphilis indicated that only one-tenth of the pregnancies (exclusive of those terminating in induced abortions) resulted in stillbirths and spontaneous abortions. The data are based upon a study of 991¹⁶ Bronx (New York) women who attended a birth control clinic in 1931 and 1932. The information was collected by Dr. Regine K. Stix of the Fund's staff, through personal interviews in which a special effort was made to obtain complete pregnancy histories.

It should be emphasized that in the foregoing discussion of possible factors underlying the low birth rates in Harlem, the procedure has been simply that of pointing out the presence of certain conditions which appear to be associated with low birth rates in a specific area. There is no doubt of the influence of intra-city selective processes but conclusive and precise evidence of the manner in which economic pressure, for instance, influences fertility must await definitive results from specialized and well-controlled data. It should also be pointed out that any implication of the determinative influence of economic hardships is based on the assumption that some form of voluntary limitation of families

¹⁵ *Health Work for Mothers and Children in a Colored Community*. Publication 131. Issued by the New York Association for Improving the Condition of the Poor, 1924, p. 11.

¹⁶ The women are largely Jewish. For the present analysis, criminal and therapeutic abortions were excluded in order to make the data more comparable with those previously mentioned. Although not explicitly stated in the reports cited, it has been assumed that few, if any, induced abortions were included.

is practiced. This whole field and that of the net influence of venereal disease on the birth rates of urban Negroes require further investigation.

In summary, the Negro families included in the survey are too much alike with respect to nativity and occupational level to afford an adequate analysis of class differences in fertility. There is the suggestion, however, that native-born Negroes of the white-collar class are somewhat less fertile than native-born laborers and these in turn are less fertile than foreign-born Negroes of the same occupational level. Approximately the same rates of fertility were observed among native Negroes of skilled and unskilled occupations and these classes combined are the dominant ones in Harlem.

Of most importance in the study is the fact that the birth rates among Harlem Negroes are generally very low. This situation is due partly to selective processes with reference to residence in Harlem as indicated by higher birth rates among the colored population in other parts of the City. Nevertheless the fact remains that Harlem is the chief residence of New York Negroes and birth rates in this section are exceedingly low. Although the data do not afford conclusive evidence, being largely circumstantial, it would appear that the factors of high rents, low incomes, and gainful employment of women have important bearing on the low fertility rates among Harlem Negroes. Selective factors relative to the interests of individuals who migrate to cities may be involved and it is also possible that the incidence of venereal disease among urban Negroes may account in part for the low birth rates. It seems more likely, however, that the situation reflects a deliberate limitation of families among married couples who can ill afford more children in the City. It may be that the low fertility rates of urban Negroes are temporary accompaniments of urbanization and may be increased as the preliminary stages of adjustment are passed. It should be emphasized, how-

ever, that an adequate interpretation of the whole problem must await investigations of a more specialized nature than the present one.

ANNOTATIONS

CAUSAL AND SELECTIVE FACTORS IN SICKNESS

To what extent are selective factors involved in the higher sickness rates among the "depression poor"? This question is discussed in a joint article on "Causal and Selective Factors in Sickness," which appears as a chapter in *SOCIAL CHANGES DURING DEPRESSION AND RECOVERY*, edited by Professor William F. Ogburn, of the University of Chicago.¹ The authors, G. St. J. Perrott and Edgar Sydenstricker, present an analysis of the so-called "Health and Depression" studies carried on by the Office of Statistical Investigations of the United States Public Health Service and the Division of Research of the Milbank Memorial Fund, from the point of view of the relative importance of the causal and selective factors involved.

These studies are based on a survey of 12,000 wage-earning families in ten localities made early in 1933. They indicated a relatively high rate of disabling illness among families hardest hit by the depression and in particular among those who were on relief in 1932. Factors contributing to this high illness rate among the new poor may have been (1) *causal*, reduced standards of living affecting the health of these families unfavorably; or they may have been (2) *selective*, for example, (a) sickly wage-earners, unemployed because of illness, were concentrated among the new poor, (b) a tendency to sickness may be associated with inability to succeed during a period of increased competition for jobs, even though sickness itself is not the direct cause of unemployment. The authors believe that the causal factor was more important because (1) the excess in illness rates among the unemployed was found among children as well as adults; (2) the highest illness rate was exhibited by families that suffered the greatest loss of income; and (3) when all families were excluded in which the wage-

¹ *SOCIAL CHANGES DURING DEPRESSION AND RECOVERY*. Edited by William F. Ogburn. Chicago, University of Chicago Press, 1935.

earner at any time between 1929 and 1932 was unemployed because of illness, the same excess in illness rate was observed in the group that had fallen from comfort to poverty during the depression.

In commenting upon these findings, the authors suggest that it seems reasonable to suppose that a reduced standard of living, including crowded housing conditions, lack of food, clothing, and medical care which accompany loss of income, had a part in causing the higher sickness rate in 1935. However, the authors point out that two other factors may have played a part. To quote from the paper:

(1) Unemployment of wage-earners due to sickness probably contributed to the loss in income of certain families; these persons may have been concentrated in the group that suffered economic reverses during the depression and have been responsible for at least a part of the high illness-rate in this group. However, analysis of the data shows this to be a relatively unimportant factor. Individuals unemployed due to sickness were not concentrated among the new poor (Table 1) and furthermore the same excess in sickness rates was observed in this group when all families were excluded in which there was unemployment due to sickness at any time between 1929 and 1932 (prior to the survey period).

(2) The depression may have been a great sifting process, separating the fit from the unfit. In spite of innumerable exceptions, the men who kept their jobs were, on the average, the more vigorous, capable, and intelligent ones. Moreover, with many exceptions, it is true that those who lost their jobs were less efficient than those who remained employed. This inefficiency may have been exhibited in many ways distinct from inability to compete in the economic struggle—perhaps a diathesis or tendency toward sickness existed among these families as a concomitant of the economic inefficiency of the wage-earner. This explanation of the higher sickness-rates among the new poor does not assume sickness, *per se*, as a cause of unemployment but postulates an inherent inferiority of which unemployment was one manifestation and ill health another. According to this hypothesis, the new poor would have exhibited a high illness-rate even in 1929 (if they could have been singled out for observation), and their lowered standard of living during the depression was not the prime cause of their high illness-rate.

The writers admit the possibility that selection played a part

in bringing about the situation observed in 1933, but it does not seem probable that selection of the less fit by the depression-screen is the whole story. Undoubtedly, those who became unemployed during the depression were, on the average, the least well equipped to compete in the keen struggle for jobs. For example (Table 1), when we compare the new poor in the surveyed group with those who remained comfortable throughout the depression, we find they had fewer household heads with high-school or college education, fewer in the white-collar occupations in 1929, that they lived in more crowded living quarters even in 1929, and exhibited a higher birth rate. Some of these findings appear to indicate that families of certain *types* were least successful in weathering the depression. However, only a rabid geneticist would believe that a theory of selection contains the sole explanation of the results of the present survey. As a matter of fact, when illness-rates

Table 1. Characteristics of white wage-earning families classified according to per capita income change, 1929-1932—five cities surveyed early in 1933.¹

	COMFORTABLE IN 1929 AND 1932	COMFORTABLE 1929—POOR, 1932	POOR IN 1929 AND 1932
<i>Percentage of all families:</i>			
With full-time workers, 1929	89.4	88.3	33.1
With full-time workers, 1932	72.7	7.0	19.7
With no employed workers, 1932	0.7	36.8	34.6
With chief wage-earner a white-collar worker in 1929	33.4	9.6	13.0
On relief, 1929	0.0	0.6 ²	14.7
On relief, 1932	0.7 ³	55.9	55.9
With household head native of native parents	44.3	43.3	26.3
With household head having high-school or college education	27.9	19.4	7.2
With unemployment due to illness, 1931-1932	6.3	6.0	9.1
Persons per family, 1933	2.8	4.0	6.1
Persons per room, 1929	0.54	0.78	1.21
Persons per room, 1932	0.55	0.93	1.27
Annual birth-rate ³ per 1,000 married women, aged 15-44 years, 1929-1932	107	133	178
Disabling illness per 1,000 persons for three-month period	119	185	153

¹ Baltimore, Cleveland, Detroit, Pittsburgh, and Syracuse.

² Total family income was used in classifying families for birth-rate tabulation: "comfortable" indicates annual family income of \$2,000 and over; "poor," under \$1,200.

³ Income classifications are based on earnings for the year; hence a few families that went on relief late in 1929 or 1932 are still classed as comfortable.

are made specific for age, sex, race, education, occupation, and relief status, the association between drop in income and high illness-rate is still evident.

A study now being made of the death-rate among families who became unemployed during the depression will throw further light on the question, because it is possible to obtain information on deaths for a number of years prior to the canvass, which is not feasible in a sickness survey. Hence, *trends* in the death-rate from 1929 to the present time can be studied for groups of families that had various types of economic history during the depression. Preliminary results indicate a rise in the death-rate between 1929 and 1933 among families in which the wage-earner became unemployed in this period.

The facts that the excess in illness-rates appears among children as well as adults and that the highest illness-rates are exhibited by families that had dropped from the highest level in 1929 appear to point to a definite causal relation between lowered standard of living and high illness-rate. But whatever the cause, the depression has presented to society for support a group of some 20 million persons in the United States who are now on relief rolls, among whom sickness is probably more prevalent than in the rest of the population. It must be recognized that medical care and preventive services for these persons are a necessity of life as well as food, clothing, and shelter. These necessities must be made available to all if the health of the wage-earning population is to be maintained.

EDGAR SYDENSTRICKER

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VACCINATION AGAINST TUBERCULOSIS

PROBABLY no research in tuberculosis being pursued at the present time is being watched with more interest than the study of the B C G vaccination introduced by Calmette in France. Since the days of Pasteur's great achievements in prophylactic immunization public attention has always been held by this type of medical progress. Also, in spite of the decline in tuberculosis mortality, there is still a substantial number of deaths from the disease among infants and small children, and vaccination holds forth the hope of protection for those living in tuberculous homes.

The bacillus of Calmette and Guérin (B C G) is an attenuated form of the bovine type of tubercle which was isolated originally in 1908 as a normally virulent organism and was subcultured for thirteen years on a bile-glycerine-potato medium before it was used for human vaccination. There has been some doubt as to the wisdom of inoculating human beings with living tubercle bacilli even though attenuated. This has resulted in study of vaccination with heat-killed bacilli. Both of these types of vaccination against tuberculosis have been thoroughly tested by means of animal experimentation in the laboratory. There are in the United States and Canada three outstanding experiments in the use of such vaccination for infants in tuberculous families which are being reported upon from time to time.

Park, Kereszturi, *et al*¹ have administered B C G orally to newborn children and subcutaneously or intradermally to children a few months of age in tuberculous households in New York City. At the present time mortality is the only criterion which can be used in judging the effectiveness of vaccination. The tuberculosis death rate during the first year of life among the 239 newborn children vaccinated orally was 0.8 per 100. The death rate of 3.2 per 100 among the 189 control children was four times as high as the rate among the vaccinated. Unfortunately the death rate from causes other than tuberculosis was so much higher among the vaccinated infants compared with the control group that some doubt is cast upon the validity of what seemed to be positive evidence of the value of B C G. On the other hand, among 150 children who were negative to 10 Mg. of tuberculin when first observed and were vaccinated parenterally a few months after birth, there was no mortality from tuberculosis, contrasted with a mortality of 2.1 per 100 in a group of 424 controls (155 positive initial Mantoux and 269 negative initial Mantoux). The mortality from causes other than tuberculosis was approximately equal for the two groups, vaccinated 3.3 and unvaccinated 3.1 per 100.

Baudouin² recently has published a report on vaccination against

¹ Park, William H.; Kereszturi, Camille; Mishulow, Lucy: Effect of Vaccination with B C G on Children from Tuberculous Families. *Journal of American Medical Association*, November 18, 1933, 101, pp. 1619-1625.

Kereszturi, Camille; Park, W. H.; Vogel, P.; Levine, M.: Fate of Children of Tuberculous Families Including Those Treated and Those Not Treated with B C G. *American Journal of Diseases of Children*, September, 1934, 48, pp. 507-516.

² Baudouin, J. A.: Vaccination Against Tuberculosis with the B C G Vaccine. *Illinois Health Messenger*, March 1, 1935, vii, No. 5, pp. 22-28.

tuberculosis with B C G vaccine which was submitted to the subcommittee on tuberculosis of the National Research Council of Canada. This particular study deals with 437 vaccinated newborn babies and 631 unvaccinated newborn babies who have been observed from one to six years after vaccination. During the first twelve months of life the death rate from tuberculosis (4.2 per 100) among the unvaccinated infants was four times the rate (1.1) among infants given B C G. The death rate from causes other than tuberculosis was practically the same for both groups, 6.3 and 6.4 per 100. For children who had attained ages from one to six years, the tuberculosis mortality was slightly more than twice as high for the unvaccinated as the vaccinated and the mortality from other causes was slightly less in the control or unvaccinated group.

The difference in the mortality from tuberculosis among the vaccinated and unvaccinated infants during the first year of life was found to be even more striking when only those in contact with positive sputum cases were considered. The death rate of 7 per 100 was slightly less than 6 times the rate of 1.2 among infants given B C G.

From this seven years' experience in the study of B C G it is concluded that "vaccination with B C G is an absolutely harmless procedure." It was noted also that the protection following vaccination was evident most strikingly in infants under one year of age and consequently the next step considered important is to determine the extent and duration of the immunity thus developed.

The tuberculosis mortality experience noted in both experiments with B C G, that of Park and Baudouin, is more similar than dissimilar. There is also agreement as to the harmlessness of B C G, but Park's conclusion as to its effectiveness is tentative since he says, "Vaccination apparently decreases the mortality due to tuberculosis. . . . The cases were too few to warrant our considering the results more than suggestive that vaccination with B C G prevents a number of children from dying of tuberculosis." On the other hand Baudouin concludes that "B C G vaccine is an indispensable weapon in any campaign directed against tuberculosis."

If one may venture a criticism of these two studies, the reader is left in ignorance as to how the controls were selected and as to whether or not all factors which might affect mortality, such as segregation, medical care, and nursing service are held constant for both groups.

For humane reasons it is practically impossible to secure an adequate control group for the study of B C G. Nevertheless we should know in what respects the two groups, vaccinated and unvaccinated, are comparable.

Goodwin and Schwentker³ have reported on method and progress in an investigation of the protection against tuberculosis in infants by the use of heat-killed human tubercle bacilli carried on at the Harriet Lane Home of the Johns Hopkins Hospital in Baltimore. The use of the vaccine was limited to newborn babies or very young infants without previous exposure to tuberculosis whose tuberculin tests were negative. No infants were inoculated unless there were reasonable expectations of their being exposed to active tuberculosis. Intramuscular injection was the only method of vaccination employed. Among the 50 vaccinated children who have been observed more than one year, there was one death from tuberculosis or a rate of 2 per 100. The tuberculosis mortality among 196 unvaccinated infants used as a control group was 4.6 per 100, or slightly more than twice as high as among the vaccinated.

The control group consisted of infants who were brought to the tuberculosis clinic of the Harriet Lane Home because of exposure to tuberculosis. None came to the clinic because of illness. The racial and geographic distribution of the control children was reported as practically identical with the vaccinated group and the two groups were followed over the same period of time and received the same medical and social aid. The authors quite frankly state that the two series of cases, vaccinated and unvaccinated, are not strictly comparable since the babies inoculated in the hospital were kept there for a period of weeks free from contact with tuberculosis, while the others remained in the home during that early period when the chance of infection is so great.

In concluding the authors express the following opinion: "Our work has given us the clinical impression that the inoculated children received some degree of protection from tuberculosis. It remains for us to continue the work for some years to test the validity of this impression. We feel that the method (inoculation with the heat-killed bacilli)

³ Goodwin, T. Campbell, and Schwentker, Francis F.: Protective Inoculation against Tuberculosis in Infants by the Use of Heat-Killed Human Tubercle Bacilli. *The Journal of Pediatrics*, October, 1934, v, No. 4, p. 475.

is a hopeful one and that it is much less open to criticism than the injection of attenuated living organisms. The use of the vaccine should not be widespread until many more children are inoculated under the most careful supervision."

The public health attitude in the United States has been to withhold any general use of vaccination of infants until experimental data have been sufficient to establish both its harmlessness and its protective value. Pending the accumulation of more data, it seems a sound policy to continue to emphasize the prompt isolation of the infant exposed to contagion in the tuberculous family.

JEAN DOWNES

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MATERNAL MORTALITY IN ROCHDALE

A successful community effort to reduce the death rate among mothers during childbirth has been reported from Rochdale, a county borough in Lancashire, England. The analysis of the experience in this area which was published¹ in the *British Medical Journal*, February 16, 1935, deserves the careful consideration of public health and medical groups generally. The maternal mortality rate in Rochdale had averaged 8.33 per 1,000 live births for the five years 1925-1929 and was one of the highest in England and Wales. For the three years during which "a deliberate effort to recast the maternity service" has been made, 1932-1934, the maternal death rate was 2.99.

A new local medical officer of health, Dr. Andrew Topping, assumed duty in October, 1930, and is credited by the authors of the report with having initiated the administrative program which has been followed. His successor, Dr. John Innes, has guided the program since 1932. A study of the clinical records for women who had died from puerperal causes led Dr. Topping to the conclusion "that the factors contributing to the fatalities could, in the main, be divided into two groups: (a) those which arose from imperfect supervision of pregnancy, so that women with complications failed to receive treatment sufficiently early to safeguard them against danger; and (b) those which arose from inadequate obstetric care during the course of labour. It was found, for example, in Group *a* that deaths were oc-

¹ Oxley, W. H. F.; Phillips, Miles H., M.D.; and Young, James, M.D.: Maternal Mortality in Rochdale, An Achievement in a Black Area. *British Medical Journal*, February 16, 1935, No. 3867, pp. 304-307.

curing from toxæmia, ante-partum bleeding, pelvic contraction, et cetera, in women whose abnormality was allowed to progress to the point of danger before the institution of adequate therapeutic measures. In Group *b* there were cases in which ineffectual and damaging attempts at instrumental intervention had been made, and in which, on review, it was clear that a greater regard for safety would have led to the withholding of such artificial intervention altogether, or, in those comparatively few cases showing evidence of potential or actual obstruction to labour, to an early removal to hospital, where the necessary treatment could have been carried out under conditions of safety difficult to attain in an ordinary home."

The steps taken to obtain the necessary cooperation and interest in a plan to improve the maternity services are described thus:

With the help of the chairman and secretary of the local Division of the British Medical Association, meetings of the general practitioners in the area were held at which the facts were freely and frankly discussed. The interest and support of the medical profession and of the midwives were thus enlisted at the outset and, as will become apparent in the course of this statement, to this must be ascribed a large measure of the success that attended the subsequent efforts.

The next step was, by means of all available agencies, such as the platform, the pulpit, and the Press, to awaken the community to an interest in the subject. By the use of appropriate propaganda, in which the Health Week was utilized, the people of Rochdale were informed in a manner that was throughout frank, but at the same time tactful, of the medical facts. It was represented that to safeguard themselves the women should make use of the ante-natal clinics; they should at once report to their doctor or to the clinic at the first sign of abnormality; and they should refrain from attempting to coerce the doctor or the midwife to adopt measures to hurry the process of labour in a manner of which their judgment disapproved. We have ascertained that in this propaganda campaign the local press and those religious and other societies which had a platform to offer, such as the churches, the factories, et cetera, all played an important and willing part.

The authors of this report on the results of the maternity program in Rochdale carried out a personal investigation in January, 1935,

YEARS	LIVE BIRTHS REGISTERED	MATERNAL DEATHS BY OFFICIAL TABULATION		DEATHS ASCRIBED TO PREG- NANCY BY INVESTIGATION	
		Number	Rate per 1,000 Births	Number	Rate per 1,000 Births
1929-1931	3,691	33	8.90	37	10.0
1932-1934	3,335	10	2.99	13	3.9

Table 1. Maternal mortality in Rochdale, Lancashire, England, prior to and after special efforts to improve maternity services.

which consisted chiefly of interviewing those "intimately engaged in carrying out the maternity services" and in studying "the circumstances leading up to the deaths" that occurred during the three years prior to the special effort, 1929-1931, as well as those that occurred during 1932-1934. Deaths during pregnancy and childbirth which had been classed by the Registrar-General as due to some intercurrent disease were also considered. The maternal death rates in each three-year period according to the official classification and according to the authors' classification are shown in Table 1.

The decline in maternal deaths is very striking and is statistically significant.² Furthermore, as the authors point out, the number of deaths from each important cause declined; there were fewer deaths from sepsis, toxæmias, eclampsia, obstetric shock, and ante-partum and post-partum bleeding.

Other significant findings reported were that "there had been a marked general reduction in the number of cases admitted (to the local maternity hospital) late in labour;" and that "women with complications noted during pregnancy and labour were being sent, in increasing numbers, to hospital at a stage when the condition was capable of being treated with greater safety." There was little change in the number of births in the hospital, but the mortality among hospital births showed a marked decline; there were 16 deaths among 1,927 births during 1929-1931 and 6 out of 1,800 births in hospital during 1932-1934.

"A considerable part of the success of the effort is to be traced to the improved practice of the doctors and midwives of the area," is the conclusion of the authors. "In greatest measure, we believe," they

² The difference between the rates in the two periods, based on the authors' classification, is more than four times its probable error, 6.1 ± 1.32 .

write, "that the change had its origin in the anxiety of those concerned to review in the frankest possible manner the principles which had previously guided their practice after their attention had been directed to the causes of the sinister position occupied by their town in the realm of maternal welfare." It follows quite logically that the authors are impressed "with the importance of a full inquiry by a responsible body into the circumstances leading to the maternal deaths in an area as a means of discovering the ways in which the standard of service may be raised," and "strongly suggest that it should become part of the routine practice of each administrative area."

The intensive efforts made in Rochdale to enlighten the women by the frank dissemination of information also are credited by the authors with a profound part in raising the standard of service. They believe that:

It has undoubtedly led them to seek advice in order to safeguard their health during pregnancy, and to solicit medical aid more quickly now that they realize the possible dangers of bleeding, severe headaches, sickness, et cetera. It has, in addition, brought to their notice the dangers that may attend instrumental delivery, and has tended to discourage the belief, which so often prejudices both the peace of mind and the practice of the practitioner, that the best doctor is he who can deliver them most quickly. Finally, by exerting a continual moral pressure, it has inspired those directly engaged in the maternity services—the public health authority, the doctors, the midwives, the health visitors, and the hospital authorities—to greater efforts in their attempt to build up a system more worthy of their town.

Recent studies of maternal mortality in the United States have led to conclusions in general agreement with those of Dr. Topping in Rochdale, namely, that many deaths were preventable and that prevention was dependent on improved obstetric practice and the education of mothers concerning the importance of medical supervision during pregnancy. The success of the intensive campaign in Rochdale has demonstrated that mothers' lives can be saved if the medical practitioners, the public health authorities and public groups cooperate in an effort to improve maternity services.

DOROTHY G. WIEHL

DIFFERENTIAL FERTILITY IN THE NETHERLANDS¹

THE Netherlands is particularly interesting to students of population problems because it presents the anomaly of a very densely populated country with an exceptionally low death rate and a rather high birth rate. Furthermore, the excellence of its vital statistics permits a closer study of the problems presented than is possible in any, except perhaps the Scandinavian, countries.

Dr. Methorst's monograph on "Differential Fertility in the Netherlands" is a case in point. It presents the results of an unusually detailed survey of differential fertility and child mortality in selected "towns" and "rural" areas. The survey was made as of 1927 and the report is presented as the Netherlands National Committee's contribution to the work of the International Population Union. The findings are compared with those of a survey made along similar lines by the Central Commission for Statistics thirty years earlier.

The data presented indicate that during the thirty years prior to 1927 the fertility of married women declined more rapidly in the towns than in the rural districts, and apparently more rapidly in the upper income classes than in the lower, both in the towns and rural districts.

In both types of communities wives adhering to the Christian Reformed, Roman Catholic, and Reformed churches were more fertile than "Other Protestants" and Jews. The proportion of families in which first births occurred less than nine months after marriage was lowest among the Christian Reformed and Reformed Church people and highest among "Other Protestants" and those who did not adhere to any creed. In general, the interval between marriage and the first birth increased with income status.

The proportion of childless unions was smaller in rural districts than in towns and somewhat smaller in the lower than in the higher income classes. Such families were more frequent among the Protestants than Catholics, and among employers than workers.

The mortality of children under five years of age declined much more rapidly during the thirty years prior to 1927 in the towns than

¹ Methorst, H. W., M.D.: *Differential Fertility; Birth-Rates and Infantile Mortality in the Netherlands. Population—Journal of the International Union for the Scientific Investigation of Population Problems. Vol. I, Special Memoir, April, 1935.* London, George Allen and Unwin, Ltd., 70 pp. 2s 6d net.

in the rural districts. In 1927 the rates were about equal in both types of communities. Child mortality was highest among the Roman Catholic and lowest among the Christian Reformed and Reformed Church groups. It was also less in the upper than in the lower income classes.

The terms "town" and "rural" areas will be misleading to American readers. The former comprise Amsterdam, Rotterdam, Utrecht, and Dordrecht, which in 1930 had populations ranging from 56,000 to 757,000 inhabitants, while the "rural" areas comprise 103 communities with populations ranging from 4,000 to 10,000 inhabitants.

The income classification in the 1927 study distinguished five groups on the basis of income tax returns. In 1897 a four-fold classification was used and it was based on rentals. The lack of comparability makes it impossible to secure precise information on trends in the fertility or mortality of specific classes.

Unfortunately, the monograph is not a satisfactory treatment of the excellent material made available for it. The text is difficult to read and not particularly helpful. Too much space has been given to over-elaborate tabulations and too little to the presentation of basic data which would permit the student to carry out his own analysis. Child mortality is more often misleadingly expressed as the per cent of families in which there were 0, 1, 2, et cetera, deaths, than in terms of the number exposed to the risk of death. In spite of these difficulties, the monograph will be valuable to students of differential fertility for the unique data which it makes available.

FRANK W. NOTESTEIN

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